

Twisting the knobs



Research to how project developers adapt their construction plans after an increase in the social rent quota.

L. Ridderikhoff B.Sc.

Master thesis



Colophon

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Social rent quota

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Abstract

The Netherlands is experiencing a large housing shortage, the government has the task to supply sufficient affordable housing. One way they do this is by setting a national quota for the share of social rent in new building projects. Project developers have to incorporate these demands in their plans; however, this has implications for the feasibility of a project. This study aims to investigate these implications of an increase in the social rent quota. This aim resulted in the following research question: “What are the effects of setting a national social rent quota for municipalities on easing the pressure on the housing market in the Netherlands?”. This research question has been split into several sub questions researching the financial feasibility, the quality of the built environment and the alterations of the plan. Interviews with experts on housing construction and stakeholders in the projects De Stationstuinen in Barendrecht and De Piushaven in Tilburg were conducted to form answers to the research questions. Furthermore, a data analysis has been conducted to research the effects of a higher percentage social rent on the housing shortage in a municipality. By combining this quantitative and qualitative research the main research question was answered. The quantitative analysis using national data on the housing market did not show a causative relation between a higher percentage of social rent and the housing shortage in a municipality. The qualitative research provided some interesting insights. Interviews about the two cases provided specific understanding of how the social rent quota works in practice. The general interview extended this with a broader understanding. As the literature and the interviews explained, demanding a percentage of social rent in a project lowers the revenue and may cause problems for the feasibility. Especially if additional demands like sustainability and parking goals are added. Developers will try to twist some knobs in order to make plans feasible again. This can be done by cutting costs (for example by creating a lower quality neighbourhood) or by increasing the revenue (for example by increasing the housing density or by realising more expensive types of housing). The interviewees explained that project developers not necessarily try to make up for their loss in profit, sometimes they accept the lower profits as long as the project remains feasible and will not cost them money. However, this depends on the investors in a project. In all interviews the importance of good understanding and communication between all parties were stressed. Municipalities should take an active role in this. Parking was in most cases a tricky point since this is often expensive and creates low revenues. In Barendrecht the municipality therefore decided to provide the parking spots themselves. Furthermore, municipalities tend to use a social land price for social rent in a project, this is done in order to make a project financially feasible for developers. Even though increasing the share of social rent can cause problems for the feasibility, nonetheless it is in the best interest for the involved parties to create a feasible plan. Overall, it was concluded that a national social rent quota for municipalities will not necessarily solve the current housing problems. A throughput on the housing market should be created on the housing market by not just building cheap social rent and making up for the lost revenue by building expensive housing in the same project. This causes the current housing crisis to be of a more qualitative nature, rather than a quantitative nature. Further quantitative research should provide more specific insights on the housing shortage per region in the Netherlands. Furthermore, this research lays the foundation for further research aiming to investigate the new government interventions, like regulating the mid priced rents. Based on the findings in this research it became clear that the government should focus more on the local housing needs instead of applying a national scale for the housing market policies. Moreover, municipalities should create a throughput for their local housing market and work together with neighbouring municipalities to provide sufficient housing for all people in the region.

Index

Colophon	2
List of figures and tables	6
Preface	7
1. Introduction	8
1.1 Problem definition	8
1.2 Research aim and questions	10
1.3 Research relevance	10
1.4 Reading guide	11
2. Theoretical framework	12
2.1 Housing markets	12
2.2 Social rent in the Netherlands	14
2.2.1 Brief historical overview	14
2.2.2 The social rent sector	15
2.3 Housing shortage	17
2.3.1 How is the housing shortage measured?	17
2.3.2 Why is there a housing shortage?	17
2.3.3 Housing construction	19
2.4 Fixing the housing shortage	21
2.4.1 Dutch government interference on the housing market	21
2.4.2 Solutions to the housing shortage	22
3. Data on Dutch housing	24
4. Methodology	27
4.1 Data collection	27
4.2 Inclusion and exclusion criteria	28
4.3 Conducting this research	28
4.4 Data analysis	29
4.5 Validity and reliability	30
5. Case studies	32
5.1 Case study: Stationstuinen Barendrecht	32
5.1.1 Data on Barendrecht	32
5.1.2 Stationstuinen	33
5.2 Case study: Piushaven Tilburg	34
5.2.1 Data on Tilburg	34
5.2.2 Piushaven	36
6. Results	38

6.1 Quantitative results	38
6.2 Qualitative results	39
6.2.1 Results interviews Piushaven Tilburg	40
6.2.2 Results interview Stationstuinen Barendrecht	41
6.2.3 Results general interview	42
7. Conclusion	44
8. Discussion	47
9. Policy implications	49
10. References	51
11. Appendix	57
11.1 Interview outline	57
11.2 List of interviewed people	59
11.3 Pearson correlation coefficient	60
11.4 Multiple linear regression model	61
11.5 Interview transcripts	63

List of figures and tables

Figure 1	9
The size of the social rent stock in % across different countries	9
Figure 2	13
The four quadrant model	13
Figure 3	18
The (expected) development of the population and households between 1960 and 2050	18
Figure 4	20
The development of the construction prices and costs in the EU between 2005 and 2021	20
Figure 5	24
Housing supply and the types of housing in the Netherlands between 2012 and 2021	24
Figure 6	25
The housing pressure in the Netherlands per municipality in 2020	25
Figure 7	26
The percentage of social rent per municipality	26
Figure 8	31
Targets visualizing research validity and reliability.	31
Figure 9	32
Average income and housing price of Barendrecht and the Netherlands	32
Figure 10	33
Types of housing in Barendrecht in percentages	33
Figure 11	34
The Stationstuinen in Barendrecht shown on the map	34
Figure 12	35
Age groups in Tilburg in percentages	35
Figure 13	35
Average income and housing price of Tilburg and the Netherlands	35
Figure 14	37
The Piushaven shown on the map of Tilburg	37
Table 1	28
Overview of the dataset.	28
Table 2	30
Overview of the used variables and the hypotheses for the Pearson correlation test.	30
Table 3	39
Results from the Pearson Correlation tests.	39

Preface

About a year ago I started the master Human Geography at the University Utrecht. During this master I focussed on the track business & location in which I followed courses on economic geography and real estate. This thesis is the final hurdle I am taking during my student life in preparation for 'the real world'.

After I attended a real estate lecture on social rent in the Netherlands I got intrigued by this subject. I was truly surprised that the Netherlands had such a high percentage of social rent, while the news was flooding with stories of how hard it was for people to find a housing in the social rent sector. This contradiction, fuelled by the implied minimum quota of 30% on social rent in every municipality started my initial ideas for this thesis. With the help of my colleagues at PAS bv and my supervisor from the Utrecht University Sergio Petralia, I managed to translate this idea into this research you are reading right now.

First of all, I would like to thank my colleagues at PAS bv who took time to help me during this process. The brainstorm session in groups or one on one were very helpful to me. A special thanks to Virginia who supervised my internship at PAS bv and with whom I had regular meetings about my progress.

Secondly, I would like to thank Sergio Petralia, my supervisor at the Utrecht University, for his guidance while writing my thesis. I also would like to thank my fellow students whom I always could ask a question or debate on how I could tackle a certain problem.

Last but certainly not least, I want to thank my parents and my girlfriend Claudia. They supporter me not only during this thesis or master, but throughout every part of my time at the Utrecht University. I do not think I would have gotten so far if it was not for their support.

Now it is time for me to close this chapter of my life as I will no longer be a university student anymore. It is time for me take the next step in my life.

Lex Ridderikhoff,

Nieuwegein 03-08-2022

1. Introduction

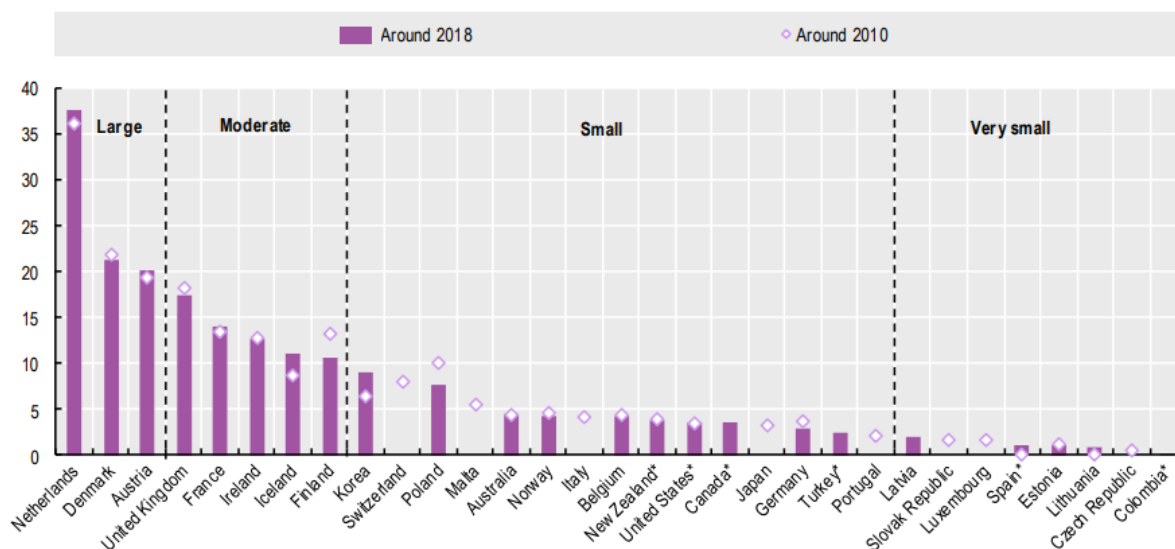
1.1 Problem definition

In 1943 the American psychologist Abraham Maslow constructed a hierarchy of needs, often represented like a pyramid (Research History, 2012). At the bottom of this pyramid Maslow placed the physiological needs, one of them being shelter. Shelter, or housing, is something every human being is in need of. Housing is also often referred to as a merit good, a commodity that an individual should have and governments are supposed to provide, for example by subsidized housing. In the Netherlands the government is obliged by the constitution of the Netherlands to provide sufficient housing (De Nederlandse Grondwet, n.d.). However, in recent years there has been a housing shortage and it gets harder for people to find a house. One of the main reasons for this housing shortage is the financial crisis in 2008, which caused a hysteresis in the number of developed houses while the Dutch population kept on growing (Boelhauer, 2019; Buitelaar, lecture slides, 8 December 2021). More recently building permits were put on hold due to nitrogen and PFAS regulations leading to an increased shortage (Kraniotis, 2021). Due to basic market forces this shortage leads to higher house prices. In order to tackle the rising house prices, the Dutch governments plans to make two thirds of the new houses affordable housing (Rijksoverheid, 2022). The Dutch government leaves space for local governments to adapt the national ambitions to the regional needs (Ministry of the Interior and Kingdom relations, 2018). This leaves room for local governments to set up tools like a social equalizing fund, this is a fund for which project developers have to contribute if they do not reach the minimum percentage set for social rent in a project. The money in this fund can be used to develop new social rent on another site in the municipality. However, municipalities still need to reach the national minimum of 30% social rent. Nonetheless, many municipalities do not reach the national minimum of 30% (NOS, 2022a).

It is important to distinguish the differences between social rent and affordable housing. Affordable housing is used for housing that includes social rent, mid rent and cheap owner-occupied housing. Affordable housing is a term which definition differs per country. Sometimes the term 'social housing' is used. Affordable housing is described by the OECD (2020) as "rental and owner-occupied dwellings that are made more affordable to households through a broad range of supply- and demand-side supports" (p. 4). These supports can include housing allowances, subsidies or tax reliefs. In the Netherlands, social rent is often seen as a part of affordable housing. In this research the term affordable housing is used as an overarching term which includes social rent as one of the ways to supply affordable housing. Other options are social owner-occupied housing (housing with a set price level to buy) or mid priced rentals. There are strict rules for housing to be labelled as social rent in the Netherlands. So is there a maximum rental price known as the liberalization threshold (set at €763.47 in 2022), a maximum rent increase per year (2.3% a year) and a maximum income (set at €40,765 for a single household and €45,014 for a multiple household in 2022) (Ministry of General Affairs, 2022b). The goal of social rent is to safeguard the affordability and the accessibility of houses for low income households. Furthermore, due to market failure, there is a shortage of available and affordable housing. People with low incomes cannot afford to rent on the private market, therefore social renting comes as a solution.

Figure 1

The size of the social rent stock in % across different countries



*Note*¹. Depiction of the size of the social rent stock in percentages across different countries in 2010 and 2018. The Netherlands has the largest share of social rent in their housing stock.

As can be seen in figure 1, the Netherlands has a considerable social rent stock, one of the largest in the world (OECD, 2020). In recent years this relative size of the social rent stock has been decreasing to just under 35%, yet, the Dutch social rental sector still remains the largest with about 10% more social rent than the number two Austria (OECD, 2022). Even though the percentage of social rental sector in the Netherlands is very high, the national and local governments still aim to increase the social rental stock by setting a quota for the amount of social rent within their city (Michielsen, Groot & Veenstra, 2019). For example, the municipality of Utrecht for example aims that 35% of the total housing stock in Utrecht is social rent, and many more municipalities take up comparable aims in their housing visions (Municipality of Utrecht, 2019). This alongside the 30% social rent quota set by minister for Housing and Spatial Planning Hugo De Jonge (Obbink, 2022). Therefore, new building projects are confronted with these aims by local governments when putting forward ideas for their new building projects and are forced to include a certain percentage of social rent. These land use regulations set by municipalities that require developers to take up a certain percentage of affordable or social rent are known as inclusionary housing or zoning in international literature (Buitelaar & de Kam, 2012). In these land use regulations, the demands by local governments for the use of a piece of land are captured. This inclusionary housing creates a trade off between project developers and municipalities, for these developers it is more profitable to build owner-occupied houses or expensive rent apartments instead of social rent (Michielsen, et al., 2019). The revenues and costs are calculated in a land development plan. These plans are reviewed every year to include up to date interest rates and development costs. However, sometimes city councils adjust their demands in a project, as described in an example by Kang & Groetelaers (2017). These changes can include for example insisting on more social rent within a project, or adjusting the share of a certain type of housing based on changes in the demand. This may happen more often since municipalities are now obliged to reach the

¹ From Social housing: A key part of past and future housing policy, by OECD, 2020 (https://read.oecd-ilibrary.org/view/?ref=137_137578-34brg1nxua&title=Social-Housing-A-Key-Part-of-Past-and-Future-Housing-Policy). Copyright 2020 by OECD

minimum of 30% social rent. These changes cause the land development plan to be reviewed and possibly changes to other aspects of the original plan might be necessary.

1.2 Research aim and questions

In order to ease the pressure on the housing market, a national social rent quota of 30% has been set up. However, the revenue on social rent is lower than the revenue on rentals in the private market, therefore a quota on social rent has effects on the set up of a building project. There are consequences for the feasibility of a project if a municipality decides to increase the percentage of social rent in a project. The land development calculations have to be rerun, the revenue might decrease and this has effects on the profits. Furthermore, it is unclear what effects this quota has on the pressure on the housing market. The aim of this research is to assess the effects of this social rent quota on the housing shortage and the building plans. Elaborating on the effects this study finds of the social rent quota, this research aims at proposing several policy implications to be taken into account during the project development and to tackle the housing shortages in the Netherlands.

Based on the aim of this research the following main question has been composed:

What are the effects of setting a national social rent quota for municipalities on easing the pressure on the housing market in the Netherlands?

In order to answer this main question several sub questions are formed. The first three questions each investigate a part of the effects of a social rent quota. The last sub question is aimed at researching the effects of a social rent quota on the housing shortage.

1. *How does a social rent quota affect the financial feasibility of a building project?*
2. *How does a social rent quota affect the quality of a building project?*
3. *In which way do developers alter the building plans due to a social rent quota during the planning process?*
4. *In which way affects a higher percentage of social rent the housing shortage in a municipality?*

1.3 Research relevance

According to the pyramid of Maslow, housing is a basic need (Research History, 2012). However, currently in the Netherlands there are too few houses available and housing prices rise rapidly making the few available houses too expensive for many people (Kraniotis, 2021). People call for new and affordable houses to be build in order to tackle this housing shortage. The national government tries to realise more affordable housing in the Netherlands by setting national demands for housing construction. In order to ensure that every municipality has enough social rent, minister De Jonge sets a minimum of 30% social rent in each municipality. However, most municipalities do not reach this goal yet (NOS, 2022a). Local governments can set additional goals, this is also known as inclusionary housing. So does the municipality of Amsterdam plan to realise 40% of rent regulated houses of their total housing stock, does the municipality of Utrecht want to realise 35% of social rent and does the municipality of The Hague want to actualise 30% of social rent in new building projects, just like the national minimum (Municipality of Amsterdam, n.d.; Municipality of The Hague, 2017; Municipality of Utrecht, 2019). Nonetheless, there is still a large shortage for affordable housing. The demands for housing construction differ per municipality based on the local needs and the local political ideologies. In order to reach the set quota, the municipality may decide to increase the quota of social rent during the planning process, leaving the developer with the task to reevaluate its

land development calculations since social rent is less profitable. This increase may lead to problems with the financing of a building project. This research focusses on providing insights in the effects of a social rent quota on the housing shortage and the planning process. This research provides better understanding of the relation between the social rent quota and the housing shortage in municipalities. Furthermore, this paper aims at providing policy implications to tackle the housing shortage based on the results found in this research. Therefore this paper contributes to a solution for the housing shortage in the Netherlands, proving its societal relevance and adding to a solution for the current housing crisis.

The Dutch social rent sector has long been an excellent example due to its large size and its good quality (Hoekstra, 2017). Therefore, much scientific literature has been written about this sector. In recent years researchers focused more on national government policies like the landlord levy or the reregulation by the national government on housing associations, as was done in the research of Hoekstra (2017) and van Gent & Hochstenbach (2019). These researches were often inspired by the growing housing shortage and its accompanying rising prices in the Netherlands. However, there are not many scientific case studies on the social rent quota as a result of inclusionary housing. There are three main studies at inclusionary housing or zoning in the Netherlands. These studies all focus on inclusionary housing in the Netherlands in general with the most recent ones from 2013 (Buitelaar & de Kam, 2012; de Kam, 2013; de Kam, Needham & Buitelaar, 2013). This research goes a step further and researches the outcomes of inclusionary housing policies.

Governmental organisations like the 'Centraal Planbureau' (the Dutch Bureau for Economic Policy Analysis in English) have written several reports on the housing situation in the Netherlands and touched upon the implications of a social rent quota, for example Michielsen, et al. (2019). However, these reports are not academic and they do not touch upon the changes in the social rent quota during the process. In these recent years of increasing housing shortage in the Netherlands and the implementations of social rent quota in housing projects, scientific studies on inclusionary housing and the accompanying social rent quota become more necessary. The scientific relevance of this research is to contribute to filling this gap within the literature by researching the effects of changes in the quota set by local governments for social rent in new building projects.

1.4 Reading guide

Apart from this introduction, the first chapter, this research exists of several chapters. In the theoretical framework, which is the following chapter (2), the most important theories and literature are covered in order to give an overview of the necessary theoretical foundation. In this chapter the housing markets, shortage and governmental solutions are discussed. Based on this literary overview the hypotheses for this research are formed. Chapter 3 deepens the understanding of the Dutch housing market, especially the Dutch social rent market, using data. In chapter 4, the used research methods are discussed. The two used case studies (Piushaven and Stationstuinen) are discussed in chapter 5. This is followed by the result section in chapter 6 in which the main findings of this research are stated. The following chapter (7) draws conclusions to the research questions based on the findings in chapter 6. In chapter 8 the conclusions are discussed and this chapter goes into the limitations of this research and the possibilities for further research. This research is concluded with the chapter 9 in which policy implications are given based on the findings of this research.

2. Theoretical framework

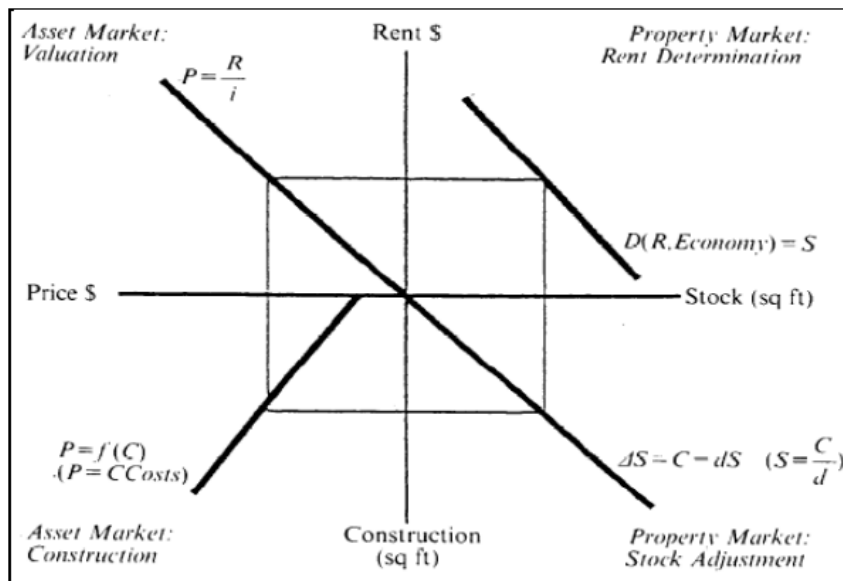
In this chapter an overview of the relevant theories and literature is given. This chapter is meant as clarification of the problem of housing shortage and the current steps taken to work towards a solution. Furthermore, this chapter gives insight in how the housing market in the Netherlands is constructed, focussing on the social rental markets. Based on the literature and theories discussed in this chapter hypotheses are composed which forms the heart of the quantitative part of this research.

2.1 Housing markets

This section provides an overview of how the housing markets are set up. This is done by first explaining what makes the real estate market special. This is followed by an explanation of the four quadrant (4Q) model as proposed by DiPasquale and Wheaton (1994) and the relation between social rental and the housing market. The 4Q model is used to explain the interconnectedness of the different markets in real estate.

Real estate as a market is a special good, it is characterized by its immobility, locational (dis)advantages which lead to heterogeneity and longevity (Geltner, Miller, Clayton & Eichholtz, 2007). This means that a piece of real estate cannot be picked up and moved to another place (immobility). Furthermore, location plays an important role and can be considered an advantage or a disadvantage depending on the desirability of the location. The scarcity of land results in location rent, as users are willing to pay more to stay on a piece of land due to good building sites becoming scarcer because of the increased space usage (Geltner, et al. 2007). And lastly, real estate often lasts for a long time and is hardly destructed (longevity). There are several types of real estate markets, this research focusses on the housing markets and specifically the social rental market.

DiPasquale & Wheaton (1994) developed a model that brings together several real estate markets, the so-called four quadrant model, also known as the 4Q-model. This model, showcased in figure 2, portrays the asset markets for valuation and construction and the property (or space) markets for rent determination and stock adjustment. The main idea behind this model is that all four markets are interconnected and that a change in one market affects the other markets. These markets have a tendency towards an equilibrium, shown by the rectangle in the middle, and move towards market clearing. Meaning that supply and demand are in equal and there is no leftover supply or demand (DiPasquale & Wheaton, 1994). The rectangle connects points on each relationship line in the four markets showing at which costs, rent or price the markets set at an equilibrium (Geltner, Miller, Clayton & Eichholtz, 2014). This model is often used in explaining how the different markets work together and why certain prices are asked. This model is a simplified version of reality and models do not always comply with reality, so does this model not take in government regulations and the large social rent sector in the Netherlands. Nonetheless, it is a useful tool in explaining how the housing markets work on the long term.

Figure 2*The four quadrant model*

*Note*². This collection of four graphs represents the four markets in the housing sector. The middle square is the long-run equilibrium in the asset and property markets. All four markets are supply and demands curves and the markets interact with each other.

Geltner, et al. (2014) provide a clear explanation of the four markets shown in this model. In the northeast quadrant the property market for rent determination is shown. The diagonal line shows the relation between the rent and the physical housing stock. In the southeast quadrant the average rate of construction and the total stock of built space available are linked in the usage market. This market shows the stock adjustment per year, taking into account the demolition and removal of stock due old buildings wearing out and the new construction of houses. Moving towards the southwest quadrant the construction market is portrayed. In this market the new construction at a certain price level is shown. Finally in the northwest quadrant the asset market valuation process is displayed. Here the affiliation between the property prices and the rent level can be seen. The rectangle shows the equilibrium prices and quantities by the intersections with the X- and Y-axis. Moving clockwise starting at 12 o'clock are the equilibrium rent price, the existing supply of space in the market, the amount of new construction in the market per year and the current asset price (Geltner, et al., 2014). Due to the interconnectedness of the markets a change in one market has effects on the other markets. For example, if the price of housing construction increases, the line in the lower left quadrant moves to the left since less houses are being built at the same costs. This causes the equilibrium (the rectangle) to move slightly northwest, leading to an increased rent (fewer space for the same price) and a lower stock adjustment. At the same time the higher rents lead to a higher valuation of the asset price. In short, the new supply decreases and prices rise. Looking at the Dutch implications of the 4Q model the large social rental sector and the government interventions disrupt the working of this model. The 4Q model does not account for government interventions and rent regulations, like a capping limit on the rent due to social rent. Instead, the rent in this model is based on the supply and demand curve and affected by the quality and location of the property. Through the introduction of social rent, a capping limit

² From "Housing Market Dynamics and the Future of Housing Prices" by DiPasquale & Wheaton, 1994, Journal of Urban Economics, 35(1), 1-27 (<https://doi.org/10.1006/juec.1994.1001>). Copyright 1994 by DiPasquale & Wheaton

and rent regulation are introduced. This leads to a lower rent compared to what is expected in the free market. Furthermore, a rise in demand of affordable housing, due to the housing shortage currently experienced, does not lead to a rise in the rent level. This rent control leads to the quality of housing to go down and creates a welfare loss, since the market and the quality of housing is not fully capitalized (van Ommeren & van der Vlist, 2016). In the Netherlands the quality of social rent is measured using the so-called WWS (or Woningwaarderingstelsel in Dutch). This system provides points for the quality of housing and rates for example the size and energy label of the house (van Gent & Hochstenbach, 2019; Ministry of General Affairs, 2022a). The maximum rent price is determined by the total amount of points. In the Netherlands the government often provides subsidies in order to maintain the housing quality and to compensate the associations for the extra costs being made to maintain this quality (van Ommeren & van der Vlist, 2016). Hence the relatively high quality of social rent (van Kempen & Priemus, 2002). This creates a pay off between either a lower quality of the build environment, lower revenues for the project developer or the government should provide a grant to the developer.

2.2 Social rent in the Netherlands

This section focusses on the social rent sector in the Netherlands and provides an historic overview of social rent in the Netherlands. Furthermore, this section explains why the social rental sector in the Netherlands is special in comparison to other countries and which actors and regulations play an important role here.

2.2.1 Brief historical overview

Already in the 1850s the first housing associations in the Netherlands started, often initiated by philanthropists who provided housing for the poor (Buitelaar & de Kam, 2012). The Housing Act of 1901 caused housing associations to be eligible for state funding and can be seen as the start of active housing policy by the Dutch central government. The significant government influence in the Netherlands during the planning process and the direct supply of land is rather unique and sets the Dutch system of urban land development apart from other countries (Kang & Groetelaers, 2017). Dutch housing policy intensified after the second world war, there was a large shortage of housing and considerable investments were made (van Kempen & Priemus, 2002; van Gent & Hochstenbach, 2019). Within less than 20 years a million houses were needed (Buitelaar & de Kam, 2012). Through the so-called 'golden triangle' many houses were realised. In this system the housing associations built the houses with subsidies provided by the central government on land provided by the municipalities at a fixed cost, often at cost-price level. A change in policy in 1974 led to an expansion of the social rental sector through rent subsidies and loans. In the 1970s and early 1980s a wave of urban renewal led to large numbers of private rented houses to be replaced by social rented housing. The new policy in combination with the urban renewal and the golden triangle proved to be very effective for social rent and in 1985 the social rent peaked at a share of 39%. While this percentage was even higher in the largest cities (van Kempen & Priemus, 2002). Meanwhile the share of expenses of the national income on housing subsidies increased from 0.5% of the national income in 1970 to 2.7% of the national income in 1990 (van Gent & Hochstenbach, 2019). In 1989 the government came with the memorandum 'Volkshuisvesting in de Jaren Negentig' (Housing in the 1990s) which moved the governmental focus towards the expansion of owner-occupied housing. The idea was that the rental sector had to become more self-supporting and less reliant on subsidies and loans (van Kempen & Priemus, 2002; van Gent & Hochstenbach, 2019). Furthermore, a liberalisation threshold (huurliberalisatiegrens in Dutch) was introduced, this threshold is yearly determined and sets the maximum rent price for social rent. Every price above this liberalisation threshold is considered as the private rental market. In the years after this memorandum, housing associations became more autonomous and received more

freedom in their investment strategies and financing. The central government promoted deregulation and liberalization and the share of social rent decreased. Municipalities became responsible for sufficient and affordable housing. The 1989 memorandum led to privatization, deregulation and decentralization (van Kempen & Priemus, 2002). This had an effect on the housing associations, which were cut loose from the state and became a sort of non-profit organizations. The number of associations decreased enormously, mainly due to merges and the benefits of economies of scale, while the size of the remaining associations increased (Treanor, 2015). Where housing associations used to operate locally, they now become active on a regional or even national scale.

In the early 1990s the Vinex neighbourhoods came up. The Dutch government stimulated growth at indicated locations near major cities and large new neighbourhoods arise. The houses in these Vinex neighbourhoods were mostly owner-occupied housing, especially aimed at attracting the middle- and high-income households (van Kempen & Priemus, 2002). These middle-income households often left social rented dwellings in the city behind. Furthermore, the end of the 20th century was a period of increasing wealth for households, often influenced by the increasing share of two-earner households at that time, and more people were able to buy a house (van Kempen & Priemus, 2002). The following paragraphs elaborate on the housing situation in the Netherlands during the 21st century.

2.2.2 The social rent sector

The Dutch housing policy is characterised by its large social rent sector. Initially the social rent sector was strong in Northern Europe and was strengthened after the second world war. Governments were characterized by the idea of a welfare state and housing was seen as a component of the social contract struck between the citizens and the government (Scanlon, Fernández Arrigoitia & Whitehead, 2015). Where the social rental sector in many European countries shrank, the social rental sector in the Netherlands remained relatively large (van Gent & Hochstenbach, 2019). This was mainly due to the previously described 'golden triangle' between housing associations, local governments and the central government (Buitelaar & de Kam, 2012). Traditionally affordable housing in the Netherlands is provided by housing associations and is meant to ensure affordability and accessibility to housing for all people. Where many countries provided social rent exclusively for low-income households, this is not the case in the Netherlands where often middle-income households were eligible for social rent as well (van Kempen & Priemus, 2002).

Affordable housing is a result of failure of the market to provide affordable housing for everyone and creates, as stated before, a welfare loss in the market. This is further explained by Romijn & Besseling (2008). They state that this welfare loss is seen in the shortage of housing supply and the lack of housing choice for households, resulting in the waiting lists and the housing situation that does not suit the housing demands. Furthermore, this welfare loss is increased by people with a skewed income-to-rent ratio which leads to misallocation on the housing market. The skewed income-to-rent ratio is further explained later on in this chapter. This welfare loss is an indication of an inefficient market in which the full market capacity is not being exploited. The housing associations are meant to build affordable social rental housing for people and often used to be part of a local government. In the 1990s these associations were privatised; however, they are meant as non-profit organizations which were backed by the government in case of an economic downfall (van Gent & Hochstenbach, 2019). These organizations used to obtain their building land from municipalities. Right after the second world war this was almost the solely way they obtained land, however, since then this percentage decreased to 60% in 1994 and 15% around 2012 (Buitelaar & de Kam, 2012). Recently housing associations often buy their land from property developers and from farmers or other landowners. This suits the idea of active land policy persuaded by municipalities

(Buitelaar & de Kam, 2012). With an active land policy, municipalities acquire and develop a piece of land themselves and sell it to a property developer or housing association and they have more autonomy over the land (de Kam, 2013). With a passive land policy, the land acquisition and development are tasks for private parties and the municipality only provides the frame within the private parties may operate through the land-use plan. The municipality does not own land and the developer has more freedom to build within the land-use plan. Active land policy bears higher risks for the municipality, but if the land is sold the financial rewards are higher. Municipalities make higher returns if the land is sold for a higher price, therefore it is in their best interest to raise the price of the land.

The increased deregulation and liberalization in the 1980s led to housing associations becoming more independent, which had financial implications for these associations. They lost state subsidies which made it more expensive for them to build social rentals and they could no longer buy land at a fixed cost. This forced these associations to use their own equity or compensate the financial losses with market-rate housing (Buitelaar & de Kam, 2012). These changes caused housing associations to become hybrid organizations that operate in a tension field and are somewhere between a public and a private organization (Nieboer & Gruis, 2015). As a result, many housing associations did not operate efficiently, either investing too little or too much in a wrong way due to poor risk management. Besides, housing associations began expanding their activities to other fields like commercial housing and non-housing activities. This period of mismanagement of housing associations peaked around 2011 when housing association Vestia, due to wrong investments, had to be bailed out by the central government for about 2 billion euros (van Gent & Hochstenbach, 2019).

On the first of July 2008 a new Dutch planning act came into effect which impacted the planning system largely. The new spatial planning system made it possible for municipalities to assign pieces of land for social-rented housing and social owner-occupied housing (Buitelaar & de Kam, 2012). This legislation opened the door for inclusionary housing in the Netherlands. Inclusionary housing is adopted because of the concern with the affordability of housing and the access to these affordable housing for those unable to access market housing (de Kam, et al., 2013). If there is no shortage of social or affordable housing, inclusionary housing policies are often not implied. However, if the need for affordable housing is large and a shortage occurs, governments can consider inclusionary housing policies to enlarge the social sector. Through this new Dutch planning act in 2008 a municipality has to make a land-use plan in which specific rules for the area can be integrated. Municipalities have to refuse building permits if the plans do not comply with the demands set in the land-use plan (de Kam, 2013). However, in practice voluntary agreements between municipalities and developers were preferred and continued under the new law. The fear of developers that municipalities would pile all kinds of requirements, leading the development returns to diminish, were not backed by other stakeholders (de Kam, 2013). Research by de Kam (2013) shows that in cases where the municipality and developers cannot agree on a voluntary basis to meet the demands set in the land development plan, municipalities are required to legally enforce these requirements. Including a percentage of social rent within a project has a negative effect on the revenue for the developers. Social rent is less profitable for project developers than other types of housing like private rentals or the owner-occupied market. In order to make up for a loss of revenue due to the increased share of social rent, developers might try to adjust other aspects of the building project.

The 2008 financial crisis had an enormous effect on the housing market and a housing crisis was triggered. The housing market turned out to be a speculative bubble which deflated and the prices paid did not properly reflect the actual value (Boelhauer, 2017). The house prices could no longer be explained by the fundamentals. The crisis and the political consequences

lead to further liberalization of the housing market in order to cut government expenses (van Gent & Hochstenbach, 2019). At the same time, the 2008 financial crisis caused housing associations to focus more on their traditional affordable housing tasks (Nieboer & Gruis, 2015). Paragraph 2.4 elaborates on the Dutch housing situation after 2008.

2.3 Housing shortage

This section dives into the housing shortage in the Netherlands, how is the current housing situation, what created the housing shortages and how is the housing shortage measured?

2.3.1 How is the housing shortage measured?

In short, the housing shortage is measured by subtracting the available housing stock from the housing demand. In 2021 there were about 99 thousand houses available and was the housing demand around 378 thousand, leading to a housing shortage of 279 thousand houses (Ministry of the Interior and Kingdom Relations, 2021). However, this number of 279 thousand houses is very general and does not differentiate between the need for cheaper or social rental housing, or more expensive rentals or owner-occupied housing. Let alone the differences between regions, so is the need in the Randstad higher than in Limburg or Zeeland (Groenemeijer, Gopal, Stuart-Fox, van Leeuwen, Omtzigt, 2021; van der Heijden & Boelhouwer, 2018). Expected is that the (future) housing shortage is the largest in Flevoland, Utrecht and North and South Holland. In Zeeland there is even a housing surplus expected (Lennartz, 2018). Therefore, more specific statistics are needed. Apart from where, there is also the question what kind of housing is necessary, project developers research the needs in an area before making development plans (Michielsen, et al., 2019)

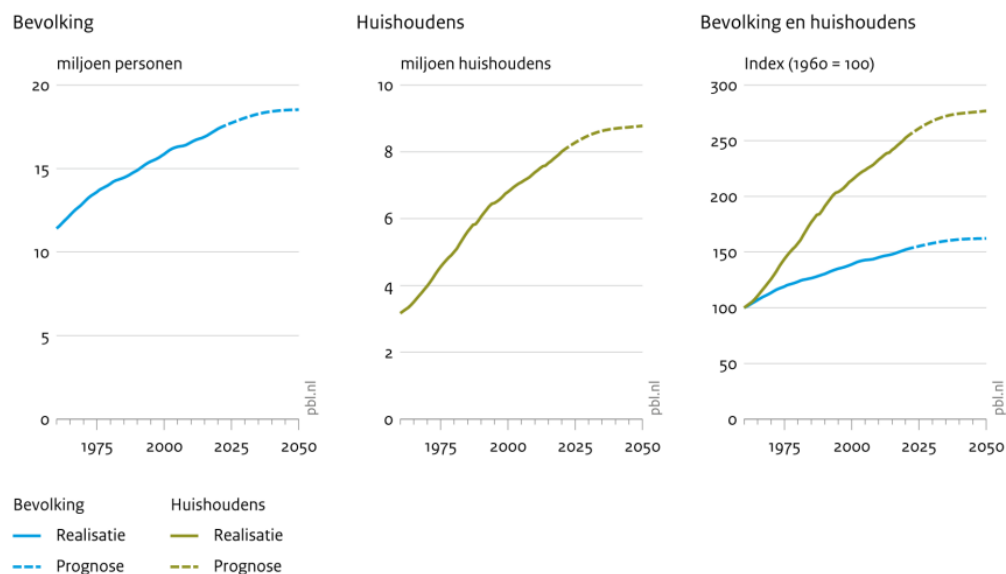
2.3.2 Why is there a housing shortage?

There are many different reasons why there is a housing shortage and these explanations can differ largely. In this section various important reasons are distinguished and explained.

Former minister of housing Stef Blok proudly declared in 2017 that the housing policy was finished and running smoothly after the abolishment of the Ministry of Housing, Spatial Planning and the Environment (van der Heijden & Boelhouwer, 2018). A few years later these words are in stark contrast to the current situation where there is a large housing shortage. An important reason for the housing shortage is the economical crisis in 2008 which caused a hysteresis in the construction of new real estate. Prior to the crisis about 79,000 homes were constructed annually, however this dropped to 50,000 in the years after (Boelhouwer, 2019; Lennartz, 2018). Due to this decrease in housing construction many construction workers left during the crisis in search of another job, this caused the wages of construction workers to rise due to a shortage of labour (Boelhouwer, 2017; van der Heijden & Boelhouwer, 2018; Michielsen, et al., 2019). This created a shortage which effects are still noticeable. The houses not build during the crisis years are not made up for, creating a hysteresis in the output of new houses (Boelhouwer, 2017; Buitelaar, lecture slides, 8 December 2021). Apart from the lack of new housing, the current housing stock is being bought by investors (van Loon & Aalbers, 2017; van der Heijden & Boelhouwer, 2018). At the same time the number of households increased due to immigration. It is expected that the population in the Netherlands will rise from 17.3 million people in 2019 to 18.5 million in 2050, which is an increase of approximately 6.94%. While over the same time period the number of households will increase from 7.9 million to 8.8 million which is an increase of about 11.93% (Schilder, Buitelaar, Daalhuizen, Groot, Hanou & van der Staak, 2021). Research by van Gent & Hochstenbach (2019) showed similar results, between 2007 and 2017 the number of housing association units decreased, with the rent controlled housing decreasing even faster. The total number of dwellings increased, however, the number of households increased even faster.

Figure 3

The (expected) development of the population and households between 1960 and 2050



*Note*³. The realised (continuous line) and the prognosed (dotted line) for the population (blue) and households (green). The left graph portrays the development of the population, the middle the households and the right graph combines these graphs. As can be seen the number of households grows much faster in comparison to the population.

As can be seen in figure 3 the number of households grow relatively faster than the total population. The left graph displays the population and the expected population development in millions of people (the blue and the dotted blue line). In the middle graph one can see the development of households in the Netherlands in millions of households (with the green line for the actual development and the dotted green line for the expected development). And lastly on the right graph the population and households are placed on top of each other with 1960 as the index year. The relative increase of households can be explained by household dilution (households become smaller, more people live alone) and the migration balance was more positive than expected (van der Heijden & Boelhouwer, 2018). Elderly people stay longer in their houses instead of going to a retirement home and more people live alone, causing the number of households to increase (van der Heijden & Boelhouwer, 2018). In short there were two conflicting forces at work, on the one hand the construction of new houses stagnated, while on the other hand the number of households and the population grew. Leading to an increasing housing shortage.

As stated before, there is especially a large shortage for social and affordable rent, even though the Netherlands has one of the largest social rent sectors in the world, as explained in the introduction (OECD, 2020). This is mainly due to the high amount of skewed income-to-rent ratio. There are two kinds of skewed income-to-rent ratios. On the one hand people live in cheap rent controlled social rent while according to their income they earn too much to qualify for these houses. This could happen due to for example promotions at work or that people move in with each other. This is often regarded to as a cheap skewed income-to-rent ratio. On the other hand, are people who live in a house they can no longer afford, for example due to people losing their job or a breakup in which one of the residents move out leaving the other behind. This is known as an expensive skewed income-to-rent ratio (Postema & Ronald,

³ From *Wonen na de verkiezingen*, by Schilder et al., 2021 (<https://www.pbl.nl/sites/default/files/downloads/pbl-2021-wonen-na-de-verkiezingen-4613.pdf>). Copyright 2021 by Schilder et al.

2014). Especially the first group is a problem for the accessibility of the social rental market. These people can afford more expensive housing, but stay in their social rental house keeping those affordable houses occupied for people who need these houses and cannot afford to rent more expensive houses (Postema & Ronald, 2014). First of all, there is little incentive for these people to move out of their cheap housing. Moving to more expensive housing is like a moving tax for these people (Romijn & Besseling, 2008). They only tend to move if the costs of the housing situation, for example due to a mismatch with their housing demands, are higher than the moving costs including the higher rent. Secondly, already in 2014 in the interviews conducted by Postema & Ronald, the people with a cheap skewed income-to-rent ratio state they have limited options to move and find a housing situation suitable to their income and sometimes are almost forced to stay in their too cheap social rental house. A growing group of middle income households are falling between two stools. They earn too much for social renting, but too little for the private rental sector or make a chance in the owner-occupied sector (Boelhouwer, 2019). Even if the monthly living expenses are lower for owner-occupied housing in comparison to the rent they pay, they often cannot apply for this. Nieboer & Gruis in 2015 already warned for the shortage of housing for the middle income households. They pointed out that housing associations were caught between the political pressure to increase rental income and provision of affordable housing. Furthermore Nieboer & Gruis (2015) stated that there is a risk of a shortage of affordable middle income housing since housing associations are pushed to focus on low income housing and it is doubtful whether private investors will focus on this group. One could argue that due to the high prices being paid for houses, it would be attractive and profitable for project developers to construct new housing. However, the Dutch housing market proves to be almost fully inelastic (Vermeulen & Rouwendal, 2007). Meaning that the construction markets barely react to an increase in price caused by an increased demand. Vermeulen & Rouwendal (2007) estimate that for the owner-occupied sector a 1% price increase leads to a 0.04% construction increase in the same year and on the long run a 0.1% construction increase. They contribute this inelasticity to the Dutch land use regulations.

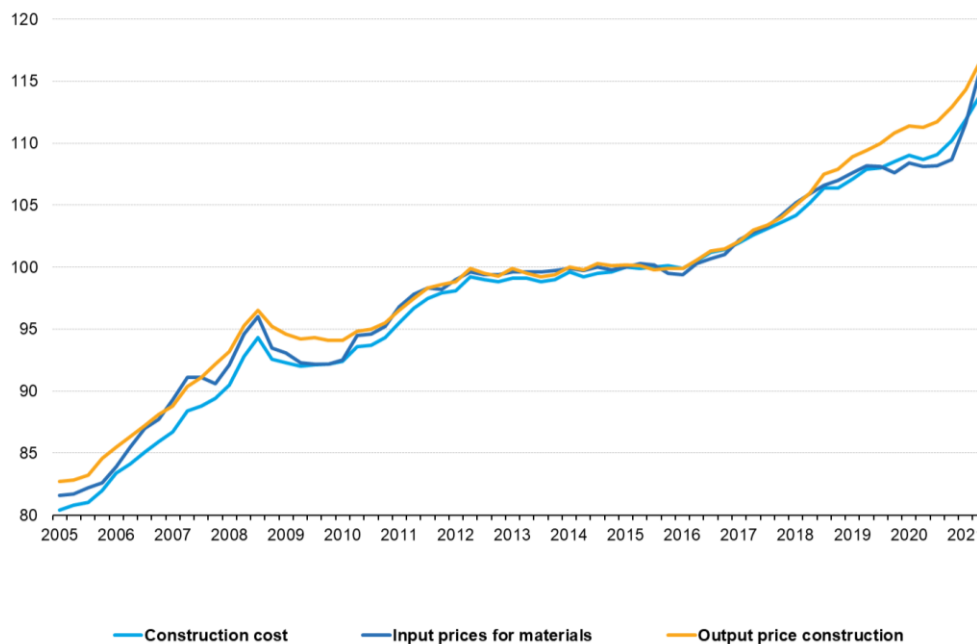
2.3.3 Housing construction

This section explains which problems occur in the construction markets and why it is hard to quickly increase the output of new houses.

One of the reasons is that the price for the materials needed for housing construction were rising in the past few years. These rising costs cause troubles for building projects since the financing of these projects need to be revised and sometimes the construction gets delayed or put off (Michielsen, et al., 2019; BNR, 2021). New agreements about the construction price need to be made. In combination to the shortage of construction workers the price for building projects is high (van der Heijden & Boelhouwer, 2018). Figure 4 shows the development of the construction prices and costs between 2005 and 2021 with 2015 taken as base year. It can be seen that since 2016 the prices took a flight and rapidly increased.

Figure 4

The development of the construction prices and costs in the EU between 2005 and 2021



*Note*⁴. This graph shows the development of the construction costs, input price for materials and the output price construction. All three lines follow the same pattern. Furthermore, it can be noted that the prices and costs took a flight recently.

Housing associations, especially in the social rented sector, have very few possibilities to adjust their revenue in order to generate profits which can be used for new buildings. They cannot rise their rents since the rent for social rent is controlled (BNR, 2021). Another factor that causes construction costs to rise are the prices for building land. A square meter of building land is far more expensive than a square meter of farming land, especially in the cities the prices for building land is very high (Michielsen, et al., 2019). Based on the zoning plans for a lot, the prices can differ largely. All these factors make it expensive for developers to start the construction of new houses and cause delays or offset for some plans. Furthermore, cities tend to attract more people than rural areas. This contributes to the high housing shortage in cities. This high shortage causes the prices to rise, increasing the need for social rent in a larger municipality. Therefore, the following hypotheses are made:

H1: A larger number of inhabitants in a municipality leads to relative more housing shortage.

H2: A larger number of inhabitants in a municipality leads to a larger percentage of social rent.

Lastly local governments are having trouble with finding suitable locations for new houses. As concluded by Einstein (2019), residents barely profit from new houses in their area, but do carry the burdens. For example, the construction, limitations of parking spaces or in the case of high-rise buildings people can lose their views or are limited in the sun hours in their gardens (Michielsen, et al., 2019). This leads to the infamous not-in-my-backyard (or NIMBY) syndrome in which people want something, like more available housing, however not near their house. Furthermore, the political support base diminishes leading to low local governmental support,

⁴ From Construction producer price and construction cost indices overview, by Eurostat, 2021 (https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Construction_producer_price_and_construction_cost_indices_overview). Copyright 2021 by Eurostat

highlighting the problems of decentralization and making local governments responsible for the placement of new houses. The main problem is that the opinion of future residents is regarded as less important since they often do not get to vote in that particular municipality with new building plans (Einstein, 2019; Michielsen, et al., 2019). This in turn has a negative effect on the houses being build.

2.4 Fixing the housing shortage

This section focusses on the steps taken by the government to overcome the housing shortage in the Netherlands. Several policy options are discussed and its effectiveness is discussed. Firstly, the policies implied by the Dutch government are discussed. This is followed by (possible) solutions to the housing shortage implied by the literature.

2.4.1 Dutch government interference on the housing market

In this section the policies implemented by the Dutch government since the financial crisis in 2008 and the effects of these policies are discussed.

The housing crisis, triggered by the speculative bubble and the financial crisis in 2008 caused banks to be more careful with handing out loans (Boelhouwer, 2017). Before the crisis people were able to get a mortgage of about 112% of their house, after the crisis this was reduced to 106% and 100% in 2018. Furthermore, banks became more cautious and it became harder for people without a permanent employment or for independent contractors to get a loan. Also, the tailored-made solutions by for example looking at the future earning capacity, the income perspectives of an applicant, were ignored by banks (Boelhouwer, 2017). In 2010 the central government introduced the 'Crisis- en Herstelwet' (freely translated into the crisis and recovery law), which main purpose was to accelerate the legal process for building projects, however no agreements were made over the housing production (van der Heijden & Boelhouwer, 2018). This responsibility for housing production was moved towards municipalities and provinces. In 2013 the landlord levy was introduced that affected housing associations and organizations with more than 50 rental houses under the limit for the rental allowance. Through this levy these organizations had to pay half a percent of the tax value of the housing assets per year (van Gent & Hochstenbach, 2019). This tax was especially aimed at the social rental sector and was essentially a tax on owning social rental houses. This levy proved to be very expensive for the housing associations and very profitable for the central government. The investment possibilities for housing associations were reduced and the social rental production shrank. The number of building permits decreased from 9,000-10,000 a year between 2010-2012 to 5,500 a year between 2013-2016 (van der Heijden & Boelhouwer, 2018). In 2021 the newly formed government planned to abolish this landlord levy by 2023 (NOS, 2021b).

After the financial crisis and the economic problems some housing associations experienced due to mismanagement the Dutch government came with a new legislation, the 2015 Housing Act. This legislation had to restrict investments made by housing associations (van Gent & Hochstenbach, 2019). Housing associations had to focus on their primal task, providing sufficient and affordable housing for low-income households. Housing in the mid price segment was a task for commercial organisations. Only in cases where a commercial organisation could or would not realise this housing, housing associations could take over these tasks, on the condition that the municipality approves and that the necessity in the housing is proven (van Gent & Hochstenbach, 2019). In practice the role of housing associations was diminished and supervision was increased. The construction of housing in the mid price segment was left to the private market. However, private investors often try to maximize their profits and tend to build in the upper part of the middle segment. This is one of the reasons why there is a shortage in affordable middle-class housing.

In recent years governmental bodies in the Netherlands tend to have too high ambitions and are piling up their demands for the construction of new housing, for example by increasing the social rent quota (Jonkman, Meijer & Hartmann, 2022). Minister de Jonge, alongside the new national government, aims to realise 30% of social rent in each municipality (Obbink, 2022). Furthermore, most municipalities set additional demands like the need for housing to be environment friendly while at the same time the quality of the housing as well as the physical environment should be maintained. All these demands combined are often not feasible and choices have to be made. This process however, takes a long time and frustrates the building process (Jonkman, et al., 2022). Many different experts as well as local politicians have to agree with the building plans before the permits can be given (Michielsen, et al., 2019). Meanwhile in the 'Nationale woonagenda 2018-2021' (National housing agenda in English) the government aims at accelerating the housing production in the Netherlands (Ministry of Interior and Kingdom Relations, 2018). This ambition is repeated in the 'Nationale Woon- en Bouwagenda' (freely translated: National Housing and building agenda) and the most recent coalition agreement (Ministry of Interior and Kingdom Relations, 2022b; Rijksoverheid 2022). So, the government on one hand tries to accelerate the housing production, while on the other hand the aims set by the government slow down the housing production. According to the national governmental policy, social rent should help reduce the housing shortage in a municipality, this leads to the following hypothesis:

H3: The relative housing shortage is lower in municipalities with a higher percentage of social rent.

The literature about housing demands slowing down the building process, is the essence of the fourth hypothesis:

H4: The average processing time of houses is higher in municipalities with a high percentage of social rent.

Larger municipalities host more different experts, while in smaller municipalities experts more often take on multiple disciplines. Based on this idea the following hypothesis is constructed:

H5: The average processing time of houses takes longer in larger municipalities, based on the inhabitants, than in smaller municipalities.

Some municipalities also make the choice to install a social equalizing fund. If the developer does not reach the demands, for example by taking up too few affordable housings in a project, a fee has to be paid to this fund. The money in this social equalizing fund is used to realise the demands in other projects (Kaag en Braassem, 2013). In this way the overall goals for housing within a municipality can be achieved.

In 2023 a new Environment and Planning Act (Omgevingswet in Dutch) will come into effect. The idea behind this act is that several laws are bundled together into one law and there will be one online location to take care of the needed permits (Ministry of Interior and Kingdom Relations, 2022a). This centralization is supposed to ease and speed up the building process.

2.4.2 Solutions to the housing shortage

This section dives into the solutions proposed to tackle the housing shortage. Apart from the most obvious solution of just building a lot of new houses and expanding the supply, there are several more creative ideas which can help solve the housing shortage. Or at least ease the shortage a bit. This section explains several of these out of the box solutions.

Van der Heijden & Boelhouwer (2018) plea that the central government should be more involved in the realisation of sufficient housing in the Netherlands. At the moment the central government provides the framework in which the municipalities and provinces have to act and

realise enough housing. According to van der Heijden & Boelhouwer (2018) the central government should take a leading position during this housing crisis. One of the measures the central government should take according to van der Heijden & Boelhouwer (2018), is setting up an investment fund that can be used to prefinance building projects. The money used from this fund can be paid back by the profits of the realized building projects and can be reused for new projects. The Dutch housing market is characterized by its procyclical policy. Meaning that during times of economic downfall the housing production slows down as well, while in times of economic growth the housing markets accelerate. However, this causes the housing market to fall behind to the demand. Therefore, an anticyclical approach would be better suitable to the developments of the demand curve (van der Heijden & Boelhouwer, 2018).

Wassenberg, van Klaveren & Zonneveld (2020) come with creative solutions to make better use of the current housing supply. They propose to adjust measurements in order to promote the sharing of a house among friends or to split larger houses in several smaller houses. Uyttebrouck, van Bueren & Teller (2020) under scribe the idea of shared housing. In their research they take the example of Amsterdam, the city with one of the largest housing shortages in the Netherlands especially for young adults. Uyttebrouck et al. (2020) explain that in 2025 the population of Amsterdam exists for nearly 15% of students and people under 35 with no children and a high education. For these groups a shared house, which differs from a dorm room, can bring a solution. Shared housing can ease the market in cities with a high degree of students and young professionals, mostly university cities. Furthermore Wassenberg et al. (2020) claim that the throughput of housing needs to be accelerated to free up housing for new households. Stuart-Fox & Blijie (2020) extend on this idea of the need for throughput on the housing market. They claim that apart from building housing for the people with most urgent housing need (often cheap housing at the bottom of the housing market and for starters at the housing market), there is also a large need for housing in more upstream parts of the housing market. By building these upstream housing a trickle down effect can occur which is supposed to help the bottom segment of the housing market. In this way the skewed income-to-rent ratio in the social rental sector can be tackled as well.

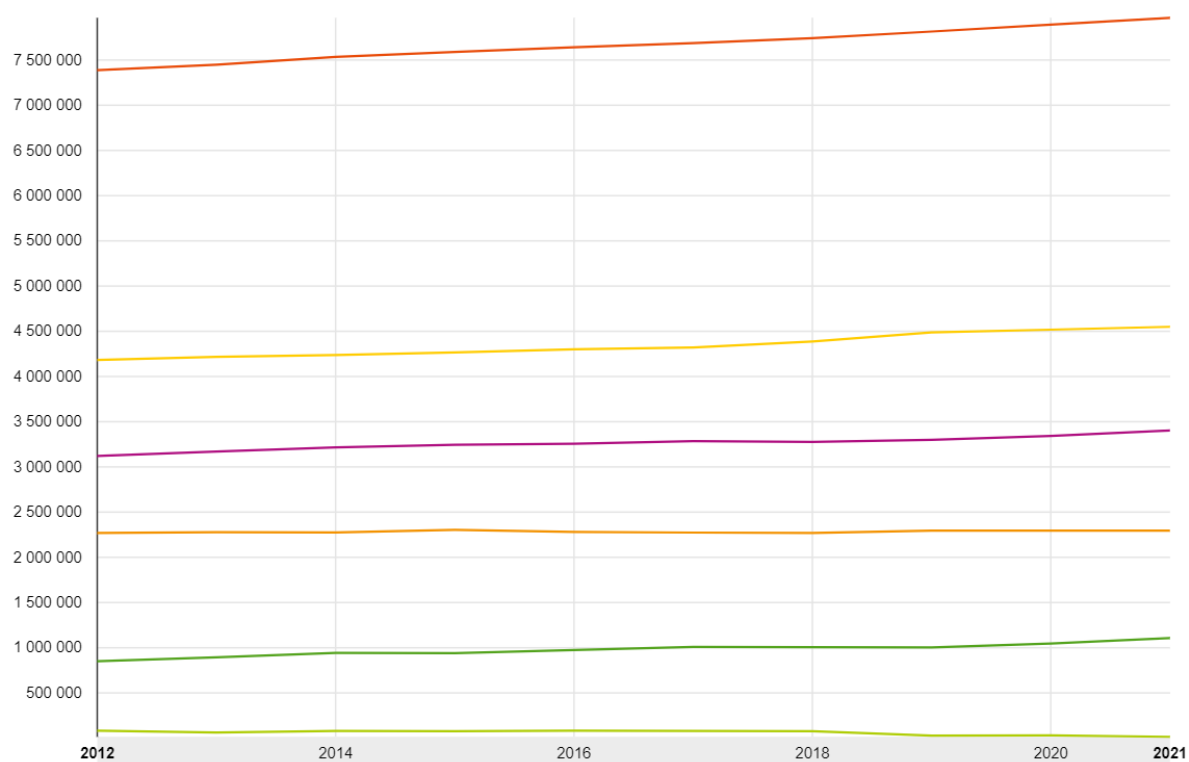
3. Data on Dutch housing

In this section the Dutch housing market and especially the Dutch social rental market is portrayed in data. This section is meant as background information on the Dutch housing market and the geographical differences for housing and housing shortage. This chapter visualizes the data and the geographical differences in the Netherlands.

In figure 5 an overview of all types of housing between 2012 and 2021 is portrayed. On the Y-axis the number of houses is shown, and the X-axis shows the periods. This figure distinguishes different kinds of housing as is explained in the legend.

Figure 5

Housing supply and the types of housing in the Netherlands between 2012 and 2021



Legend figure 5:

Red: total housing supply

Yellow: owner-occupied housing

Purple: total rental housing

Orange: rental housing owned by a housing association

Dark green: rental housing owned by others

Light green: ownership unknown

*Note*⁵. Rental housing owned by a housing association stays rather equal, while the unknown ownership decreases. All other types of housing only slightly increase in this period.

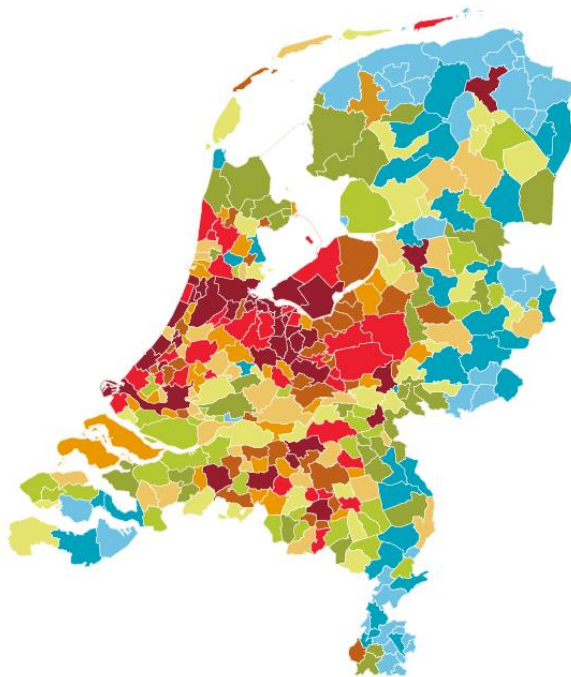
The Dutch housing supply grew from 7.39 million houses in 2012 to 7.97 million in 2021, which meant about 64,000 houses a year were added in this period (Centraal Bureau voor de statistiek or CBS, 2021c). As can be seen in figure 5 the supply of rental housing owned by an

⁵ Adapted from Voorraad woningen; eigendom, type verhuurder, bewoning, regio, by CBS, 2021c (<https://opendata.cbs.nl/statline/#/CBS/nl/dataset/82900NED/line?ts=1649147515076&fromstatweb=true>). Copyright 2021 by CBS.

association (mostly social rent) barely changed within this period. According to the Rijksoverheid (2021) there were about 3.3 million rental houses in the Netherlands and about 2.3 million of these rentals were social rent. Between 2012 and 2021 the population increased with almost 750,000 people, or about 82,800 people a year (CBS, 2021b). This means that during this period 0.78 houses a person were built. This has an effect on the housing shortage right now. Figure 6 shows the housing pressure per municipality in 2020. Based on the housing transactions in 2020, the average purchase price and the household prognosis till 2029 the Bouwfonds Gebiedsontwikkeling (BPD) calculated the pressure on the owner-occupied housing market. The pressure on the housing market is the largest in the Randstad and near the large cities, while in areas like the far north, the east and Zeeland and Limburg there is much little pressure on the owner-occupied housing market, just like for the rental market (BPD, 2021). In this map the dark red areas experience the most pressure on the housing market, while the light blue experiences the least pressure. The green and yellow municipalities are in between. Figure 6 shows how the housing shortage in the Netherlands is very concentrated, while in the rural areas there is a small shortage or in some cases even a housing surplus. The relative added housing supply shows a similar pattern to the one shown in figure 6. The municipalities with the highest housing pressure are often also the municipalities with the highest percentage of social rent in 2020 (Teije, 2021). A statistical analysis later on in this research further investigates the relation between the housing pressure and the percentage of social rent.

Figure 6

The housing pressure in the Netherlands per municipality in 2020



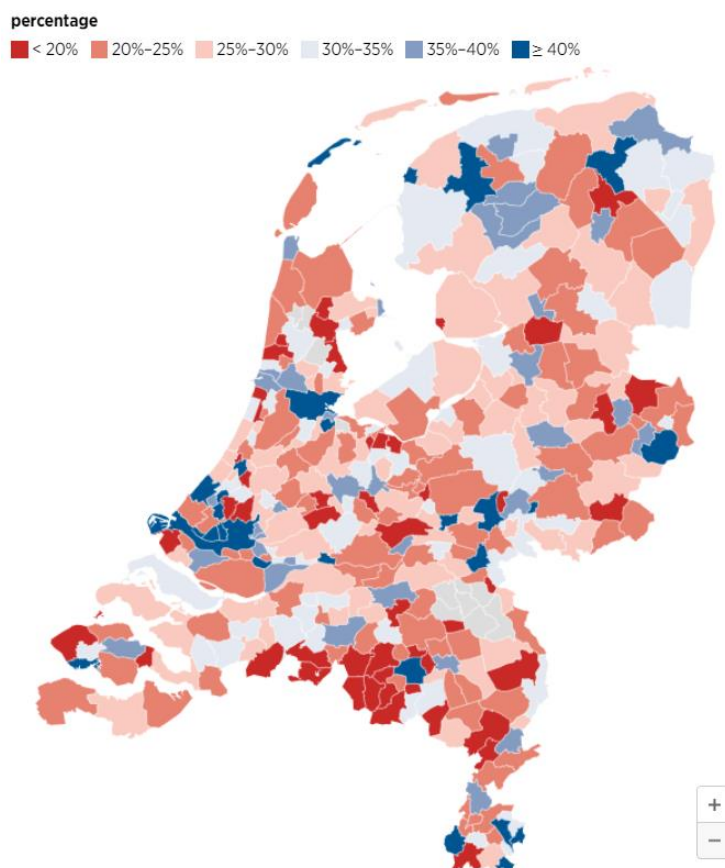
*Note*⁶. Dark red municipalities experience the highest housing pressure, while the light blue municipalities experience the least pressure in the housing market. The Randstad and the large cities experience the highest pressure on the housing market.

⁶ From *Woningdruk blijft hoog in Randstad en loopt op in aantal provincies*, by BPD, 2021 (<https://www.bpd.nl/actueel/persberichten/woningdruk-blijft-hoog-in-randstad-en-loopt-op-in-aantal-provincies/>). Copyright 2021 by BPD

The Dutch government with minister de Jonge aims at realising 30% of social rent in each municipality, however two thirds of the Dutch municipalities do not reach this quota (Muskee, 2022; Obbink, 2022). Where some municipalities, like Groningen with 57.5% social rent, reach this goal with ease, other municipalities are still far of this quota, for example Rozendaal in Gelderland with 4.7%. There is a large discrepancy between several areas in the Netherlands. Where most major cities in the Netherlands easily reach the 30% social rent in their housing stock, smaller places often do not reach this quota (Obbink, 2022). If a municipality already reaches the 30% social rent, they may focus on building houses for middle-income households (Muskee, 2022). Figure 7 shows the local differences between the social rent percentages investigated by Dutch newspaper Trouw (Obbink, 2022).

Figure 7

The percentage of social rent per municipality



*Note*⁷. The dark blue coloured municipalities have the highest percentage of social housing (at least 40%), while the dark red municipalities have the lowest share of social housing (less than 20%).

⁷ From Meer dan de helft van de gemeenten heeft te weinig sociale huurwoningen, by Obbink, 2022 (<https://www.trouw.nl/binnenland/meer-dan-de-helft-van-de-gemeenten-heeft-te-weinig-sociale-huurwoningen~b895d061/>). Copyright 2022 by Obbink

4. Methodology

This chapter discusses the used methodology for this research, this includes a review of the data collection process, the inclusion and exclusion criteria, analysis methods and the validity and reliability of this research. The choices made during the research process are explained in order to give insight in the research process and to better understand the way this research is conducted.

4.1 Data collection

For this thesis mixed methods research has been conducted to determine what the effects are of a national social rent quota for municipalities on easing the housing pressure in the Netherlands. It has been decided that interviews with experts in combination with a statistical analysis are the most suitable way of collecting data. Interviews tend to capture the insights in the experiences of the people involved. This leads to a better understanding of the experiences by the experts and it leaves space for the expert to share new information. Experts in this case were people who were experienced with a social rent quota in different building projects in the Netherlands. This experience was due to their profession. The use of statistics can substantiate the insights and give a clear understanding of the effects of social rent on the housing shortage in the Netherlands.

The questions list for the interviews was created based on the information gathered from the literature in the theoretical framework. This question list was checked by experts on housing construction to improve its quality. The aim of the interviews was to form answers to the research questions; therefore, the question list was composed in such a way the responds in the interviews can be used to answer the research questions. The interviews were constructed in a semi-structured manner. In this way the interviews can be compared to each other, and during the interviews follow-up questions were asked to deepen the insights formed from these interviews. The question list used in the interviews is provided in appendix 11.1. These interviews were, with permission, recorded and transcribed in order to analyse the information. The theoretical framework was formed to provide insights in the relevant theories, the history of affordable housing in the Netherlands, the housing shortage and the possible solutions to the housing shortage. As explained, the literature was used as the basis for the interview list, furthermore the literature provided general insights and provided context to the conclusions and discussion.

For the qualitative part of this research, data was collected from the CBS, research conducted by Dutch newspaper Trouw and by the research department of ABN AMRO. The most recent available data was used. The municipalities are responsible for providing sufficient housing (Van Kempen & Priemus, 2002). Therefore, the data was gathered per municipality since this best reflects the different local policies and its effects. In recent years several municipal border changes have taken place. This research used the most recent municipal borders (as of 24th of March 2022). The 'special municipalities', as they are called, in the Caribbean Netherlands are excluded from this research since this research focusses on the Netherlands purely and not on the broader Kingdom of the Netherlands. Due to the recent changes in the municipal borders, some data had to be altered. For the new municipalities Land van Cuijk, Dijk en Waard and Maashorst the data of multiple municipalities that have dissolved in these new municipalities have been pooled. Land van Cuijk is formed by the former municipalities Boxmeer, Grave, Mill en Sint Hubert en Sint Anthonis. Dijk en Waard used to be Langedijk and Heerhugowaard. Maashorst used to be Uden and Landerd. Table 1 provides an overview of the collected variables in the dataset. The absolute housing shortage in 2030 was composed by ABN AMRO by calculating the prognosed population and analysing the given building permits in a municipality. Therefore, these numbers are a result of the current trend analysis. Changes in the current trends may lead to different numbers in 2030.

Table 1

Overview of the dataset. The left column lays out the different variables, the middle column explains from which source the data was gathered, the right column tells from which date or year the data is.

Variable	Source	Year of the data
Municipality	CBS	Per March 24 th 2022
Province	CBS	Does not apply
Inhabitants	CBS	2020
% Social rent	Trouw	2021
Households size	CBS	2021
Average processing time	CBS	2017
Absolute housing shortage in 2030	ABN AMRO	2019

4.2 Inclusion and exclusion criteria

The inclusion and exclusion criteria describe the characteristics of the used data and information during the research process. This research aims to use the most recent and useful literature available. This has been done since recent literature tends to be most relevant to the current situation. During the literature review the data of the source was an important criterion to include or exclude the source. For the 4Q model the original scientific literature introducing this theory has been used, since this paper best explains the model. Also, for the historical overview some older sources have been used if they better reflected the events that have happened. Furthermore, most of the literature used is focussed on the Netherlands, because these researches suit the focus of this research best. The housing market can differ largely within countries, therefore sources focussed on the Netherlands seemed most suitable. The literature has been gathered using Google Scholar. The data used in this research is also selected based on its actuality and whether the data is relevant for this research. The data used was collected from multiple, trustworthy sources like national research institutions or from institutions connected to the Dutch government itself. The most recent available data was included in this research.

For the case studies a case was chosen in which the municipality set a rather low quota (Piushaven in Tilburg with 20% social rent and 10% mid rent) and a case in which the municipality set higher demands (De Stationstuinen in Barendrecht with 30% social rent and 30% other affordable housing). By selecting these cases a comparison can be made between a high and a low affordable housing quota. The interviews were conducted among stakeholders and experts on the planning process and financial aspects of these cases. This includes people at municipalities, project leaders and consultants on the financial aspects of a building process. By interviewing experts, the reliability and the external validity were enlarged.

4.3 Conducting this research

The interviews were conducted in Dutch since the researcher and the respondents were native Dutch speakers. Conducting the interviews in Dutch made it easier for the respondent to answer since the used terms were more familiar in Dutch. The interviews were structured along several topics. Firstly, the respondents were asked some general questions about themselves and their involvement with the specific case. Secondly, a selection of questions about the municipal and national policy on housing was asked. This was followed by the financial effects of a social rent quota, the quality of the build environment and the general effects of a social rent quota on building plans. The questions were aimed at their general experiences and at their experiences specifically with either the Piushaven or the Stationstuinen. At the end of the interview the respondent was given the space to add comments and the main points discussed

during the interview were summarized. The interviews were conducted either at the work location of the respondent or through online communication tools as Microsoft Teams. These interviews were conducted one on one. After conducting several interviews theoretical saturation occurred. New interviews provided no new insights. That was the point it was decided that the data gathering through interviews was done. Appendix 11.2 provides an overview of the people interviewed for this research and their function and involvement with the cases or project development in general.

4.4 Data analysis

In the dataset a new variable, relative housing shortage, was computed. In the dataset absolute numbers for the shortage of houses were used. However, in order to be able to make comparisons between municipalities these absolute numbers had to be transformed to relative numbers. This was done by dividing the variable 'housing shortage in 2030' by the number of inhabitants in a municipality. By multiplying this outcome by 1,000 the new variable relative housing shortage was computed. This variable provides the number of houses that are too few or too many per 1,000 inhabitants in each municipality. Since the variable inhabitants contained very large numbers and a large gap between the highest and the lowest numbers, this variable was turned into a logarithmic variable. This was done using the option "Compute Variable" in SPSS. Using the formula $LG10(Inhabitants)$ the new logarithmic variable was computed.

Statistical analyses were conducted using the statistical program SPSS. Using the gathered data, the hypotheses from chapter 2 were tested. This was done by first testing for correlation between several variables. Due to the large sample size (all 343 Dutch municipalities), it was taken for granted that the used variables have a normal distribution. All used variables are either interval or ratio variables, therefore, Pearson's correlation coefficient is chosen. The municipalities Zandvoort and Valkenburg aan de Geul the data did not show the average processing time and for Rozendaal, Schiermonnikoog and Vlieland the average income per person was missing. Therefore, these variables were marked as missing values for these municipalities. Since the correlation can be either positive or negative, the variables are tested for positive and negative correlations, also known as a 2-tailed test. Table 2 shows the variables that were compared and which hypothesis is connected to this statistical test.

Table 2

Overview of the used variables and the hypotheses for the Pearson correlation test. The left and middle column explain which variables were tested, while the right column connects the used variable to the corresponding hypothesis.

Variable 1	Variable 2	Hypothesis
Inhabitants log	Relative housing shortage 2030	<i>H1: A larger number of inhabitants in a municipality leads to relative more housing shortage.</i>
Inhabitants log	% social rent	<i>H2: A larger number of inhabitants in a municipality leads to a larger percentage of social rent.</i>
% social rent	Relative housing shortage 2030	<i>H3: The relative housing shortage is lower in municipalities with a higher percentage of social rent.</i>
Average processing time	% social rent	<i>H4: The average processing time of houses is higher in municipalities with a high percentage of social rent.</i>
Average processing time	Inhabitants log	<i>H5: The average processing time of houses takes longer in larger municipalities, based on the inhabitants, than in smaller municipalities.</i>

To rule out the logical fallacy that a correlation implies a causation, further tests were conducted to test whether apart from a correlation also a causation between the variables in the hypotheses could be found. This was done by conducting a multiple linear regression in SPSS. Only the hypotheses that showed a correlation in the Pearson test were investigated with this regression. Two regressions were run. In the first the relative housing shortage in 2030 was used as a dependent variable, the log inhabitants and the percentage of social rent were the independent variables and average income, household size and the average processing time were used as control variables. For the second regression the percentage social rent was the dependent variable, the log inhabitants was the independent variable and the average income per person, household size, average processing time and the relative housing shortage in 2030 were used as control variables. Again, in these tests the used variables were assumed to be normal distributed and either interval or ratio variables.

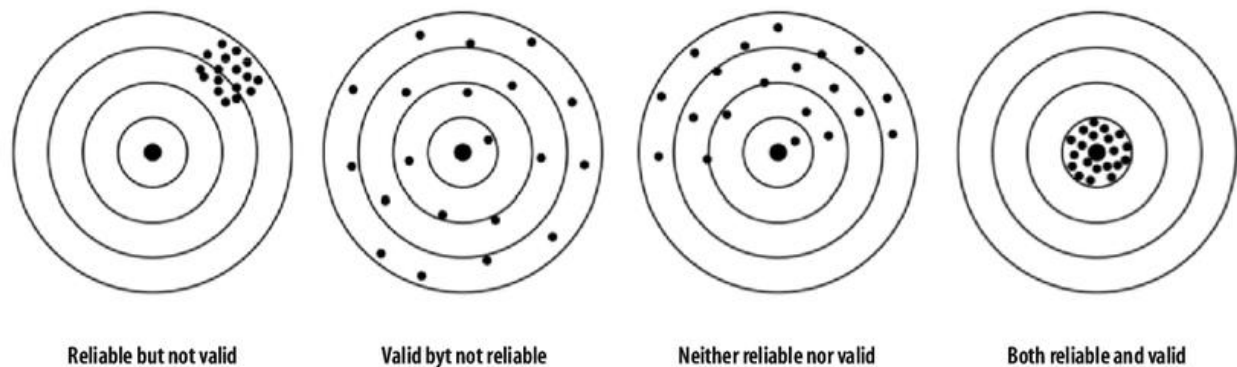
The interviews were transcribed in an intelligent verbatim transcription. For this research it is irrelevant how the information was brought. Therefore, this manner of transcription is best suitable for this research. The transcripts of the interviews were analysed and the useful information was incorporated in the result section.

4.5 Validity and reliability

Research should maintain a high validity and reliability. A target, like in bow shooting, is one of the best ways to visualize and explain what validity and reliability in terms of a research mean. This target is seen in figure 8. In order for research to be valid the instrument used in the research needs to be 'on target'. This means that the used instrument should measure the one thing that the research aims to measure. Reliability within research means that the found results are consistent to each other. If this research is reproduced, the findings should be similar.

Figure 8

Targets visualizing research validity and reliability.



*Note*⁸. Reliable data means all findings are alike (the dots are close to each other). Valid data measures what it had to measure. In the right target the data is both reliable and valid.

In this case this research is valid if it manages to map out the effects of a national social rent quota for municipalities on the housing pressure in the Netherlands. In order to maintain the validity of this research the interview questions have been formed based on the insights from the literature review. In this way it was made sure that the interview questions were grounded in the theory. The semi structured manner of conducting the interviews further helped to maintain a high validity and reliability of this research since the research method maintained the same. Through this manner this research can more easily be repeated and the results are consistent. Furthermore, the questions asked in the interviews were open and neutral questions in order to stay away from possibly influencing the respondent and to providing the opportunity for the respondent to elaborate on the given answers. Since the interviews were conducted among experts on housing in the Netherlands, the respondents were familiar with most of the terms used. If needed the used terms were explained to the respondent. The questions were formulated as short and concrete as possible in order to keep the interview clear for the respondent as well as for the researcher. This added to the validity of this research. By interviewing experts who had experience at multiple projects and asking them about their experiences at these other projects the reliability of this research was maintained.

This research uses national data on housing in all municipalities of the Netherlands. Therefore, this research has a high ecological validity within the Netherlands. However, due to housing markets being dependent on policies by national governments, in combination to the special position social rent has within the Dutch housing market, the external validity on an international scale is rather low. The used data has been selected on the basis of the set research questions and hypotheses. Therefore, the data collected suits the research objectives. The tests for correlation and causation conducted using SPSS were based on the hypotheses stated in the theoretical framework, which led to a high face validity. By constantly checking the hypotheses and the conducted statistical tests to the research questions the construct validity was maintained. The dataset was created with great care and was checked to filter out random errors.

⁸ From "Psychometric properties in instruments evaluation of reliability and validity," by A. C. de Souza, N. C. Alexandre & E. de Brito Guirardello, 2017, *Epidemiologia e Serviços de Saúde*, 26(3), p. 652 (<https://doi.org/10.5123/S1679-49742017000300022>). Copyright 2017 by de Souza, et al.

5. Case studies

In chapter 2 a general context on the Dutch housing market, social rent and the housing shortage is provided. This chapter focusses on a number of cases and discusses these cases in dept. For each case specific data on the housing market, shortage and population in the municipality is discussed, just as the housing policy in that municipality and the characteristics of the building project this case focusses on. This is done in order to provide context to the researched cases.

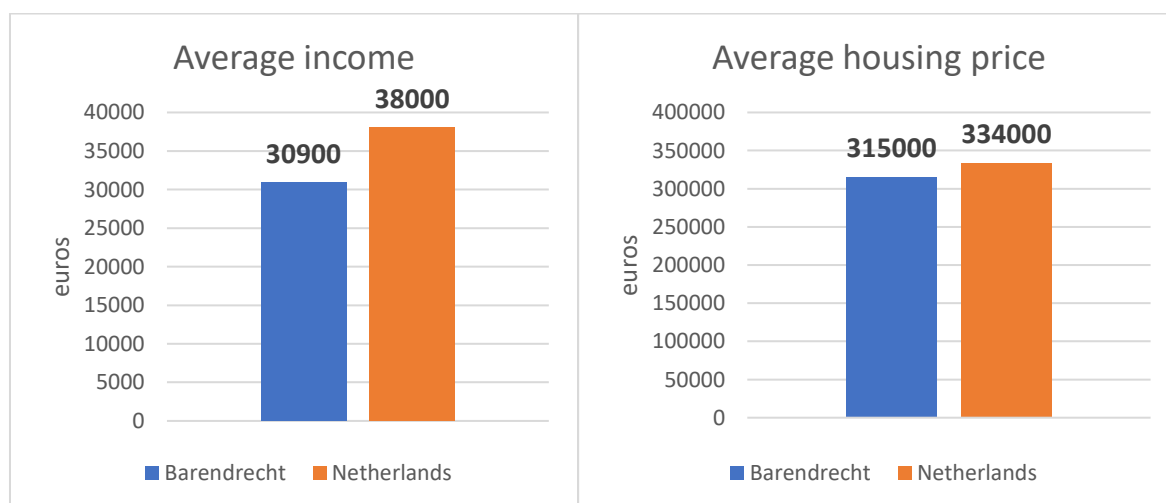
5.1 Case study: Stationstuinen Barendrecht

5.1.1 Data on Barendrecht

One of the case studies is the Stationstuinen in the municipality of Barendrecht. This section starts with providing some data on the municipality of Barendrecht, situated in the province of Zuid-Holland. Located south of Rotterdam, this city is part of the Rotterdam – The Hague metropolitan area which contains about 2.4 million inhabitants. Barendrecht itself has about 48.7 thousand inhabitants, according to data from the CBS (2021b) in 2020. About 17.7% of these inhabitants are children till the age of 15, 17.9% are 65 years or older. The largest group are the people between 45 and 65, this makes up 30% of the population. Figure 9 shows the average income and the average housing price in Barendrecht and the Netherlands. As can be seen in this figure the average income in Barendrecht is lower than the national average, as is the average housing price in Barendrecht. The income in Barendrecht lies 18.7% lower and the housing price lies 5.7% below the national average.

Figure 9

Average income and housing price of Barendrecht and the Netherlands



*Note*⁹. These graphs show the difference between the average income and housing price in Barendrecht (blue) and the Netherlands in general (orange).

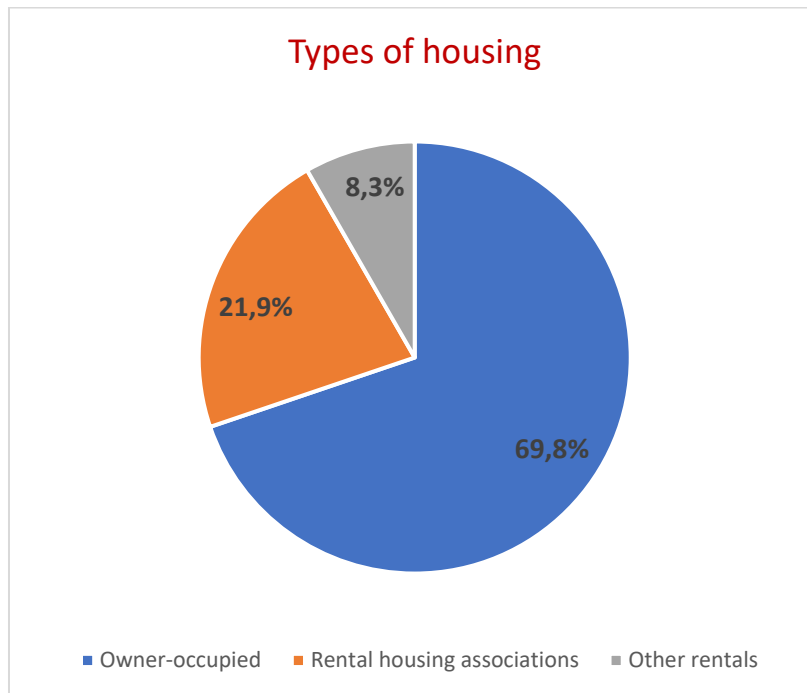
The city is proud of its green surroundings and wants to maintain this aspect in their city. There are 19,594 houses registered in 2022, of which 26.5% multiple-family homes and 73.5% single-family homes (VNG, 2022). In comparison to the average statistics in the Netherlands, Barendrecht has less multiple-family homes and more owner-occupied houses. As can be seen in figure 10, most houses in Barendrecht are owner-occupied. On average 43% of the houses in the Netherlands are rentals, while in Barendrecht this is limited to 30.2%. 20.3% of

⁹ Data source: CPB, 2021; allecijfers, 2022a; CBS, 2021a

the houses in Barendrecht are social rent, this is much lower than the 30% demanded by minister de Jonge (Obbink, 2022).

Figure 10

Types of housing in Barendrecht in percentages



*Note*¹⁰. Owner-occupied housing is the largest in Barendrecht, followed by the rentals from housing associations and other types of rentals.

5.1.2 Stationstuinen

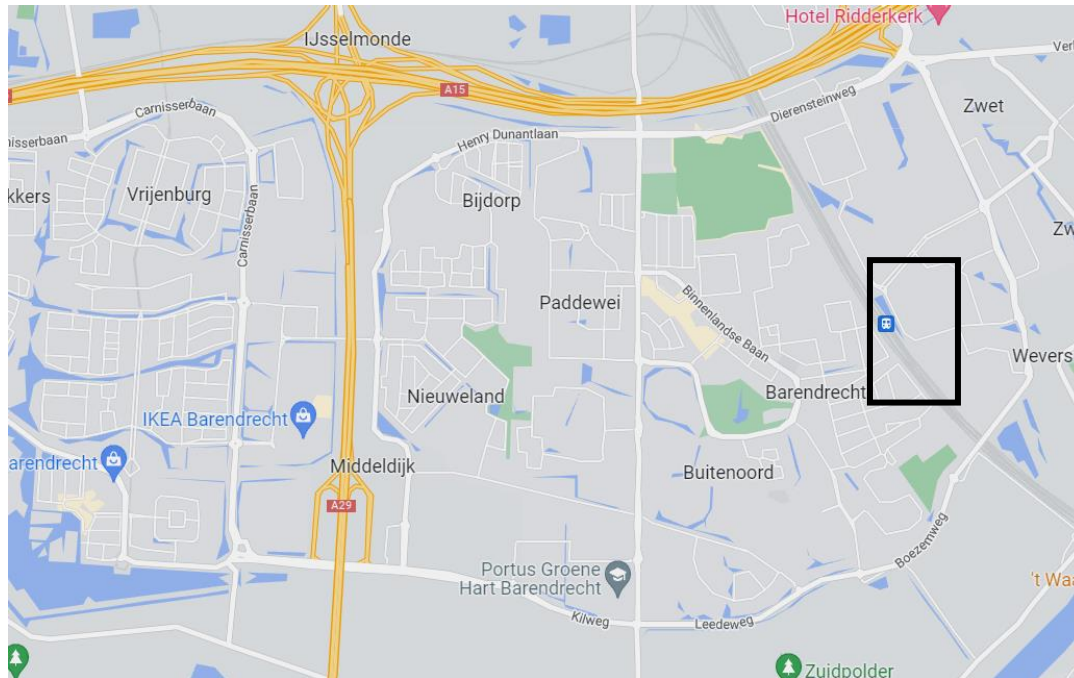
The region of Barendrecht is growing and there is a prognosed housing shortage of 159 houses, or in relative terms 3.3 houses per 1,000 inhabitants in 2030 according to research conducted by ABN AMRO in 2019. In order to fulfil this housing need in the municipality the project "De Stationstuinen" will be realised. As shown in figure 11, at the east side of the train station of Barendrecht the municipality is planning to transform a business park into a new neighbourhood of about 3,500 houses. This project will also include some shops, hospitality services, schools and other services (Municipality Barendrecht, 2022). This project aims to include 60% affordable housing, split up in 30% social rent and 30% other kinds of affordable housing. The goal is to provide a livid place for housing, work and recreation. This 60% of affordable housing is rather high in comparison to most other projects, it could be a compensation for the 20.3% of social rent overall in the municipality. The current companies located at this site are moved to another place, like the newly to develop business park Nieuw Reijerwaard in Ridderkerk, at about 1.5 kilometres away as the crow flies (Municipality Barendrecht, 2022). As can be seen on the map, the west side of the railway is a more crowded residential area, while the east side has a less dense build environment. The Stationstuinen will be the first large scale residential area at the east side of the railway in Barendrecht. At

¹⁰ Data source: VNG, 2022

this moment, the Stationstuinen project is in its design phase and no buildings are yet realised. The construction is planned to start in 2023.

Figure 11

The Stationstuinen in Barendrecht shown on the map



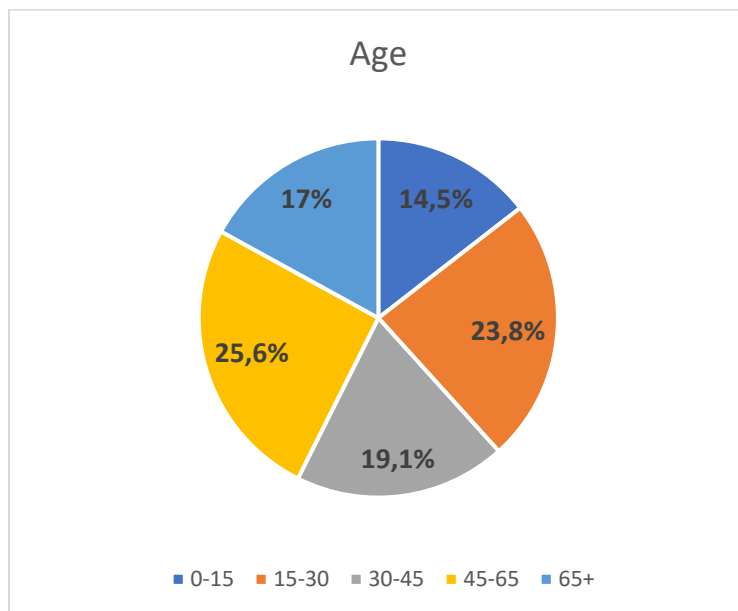
Note¹¹. The Stationstuinen are located in the square on the map, on the east side of the train station.

5.2 Case study: Piushaven Tilburg

5.2.1 Data on Tilburg

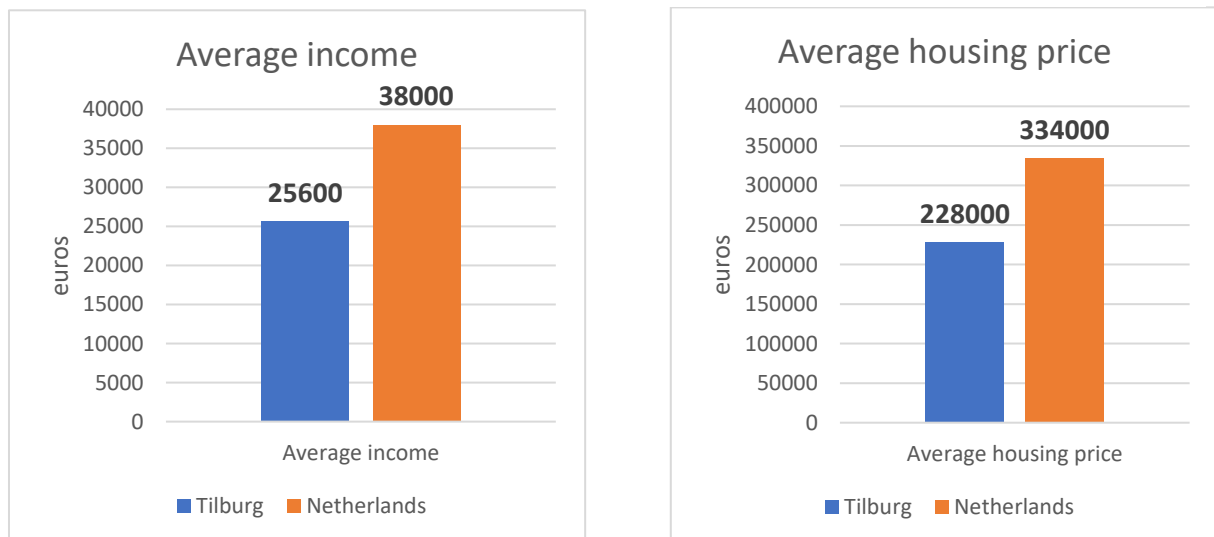
Another interesting case to look at is the Piushaven in Tilburg. The municipality Tilburg hosts about 219,8 thousand inhabitants, making it the second largest municipality in Noord-Brabant just behind Eindhoven (CBS, 2021b). Figure 12 shows the division of the age groups in Tilburg, as can be seen from this chart the groups are pretty evenly divided. Due to the present university and other forms of higher schooling Tilburg tends to attract students and young professionals.

¹¹ Google Maps (2022)

Figure 12*Age groups in Tilburg in percentages*

*Note*¹². The largest age groups are the 45-65 and 15-30, while 0-15 is the smallest age group.

As shown in figure 13, Tilburg has a low average income in comparison to the average in the Netherlands, even one of the lowest of the province. This is also due to the large share of students. However, the average housing price in Tilburg is also lower than the Dutch average.

Figure 13*Average income and housing price of Tilburg and the Netherlands*

*Note*¹³. These graphs show the difference between the average income and housing price in Tilburg (blue) and the Netherlands in general (orange).

¹² Data source: CBS, 2021b

¹³ Data source: CPB, 2021; allecijfers, 2022b; CBS, 2021a

The average income in Tilburg lies 32.6% lower than the national average, the average housing price lies 31.7% lower than the national average.

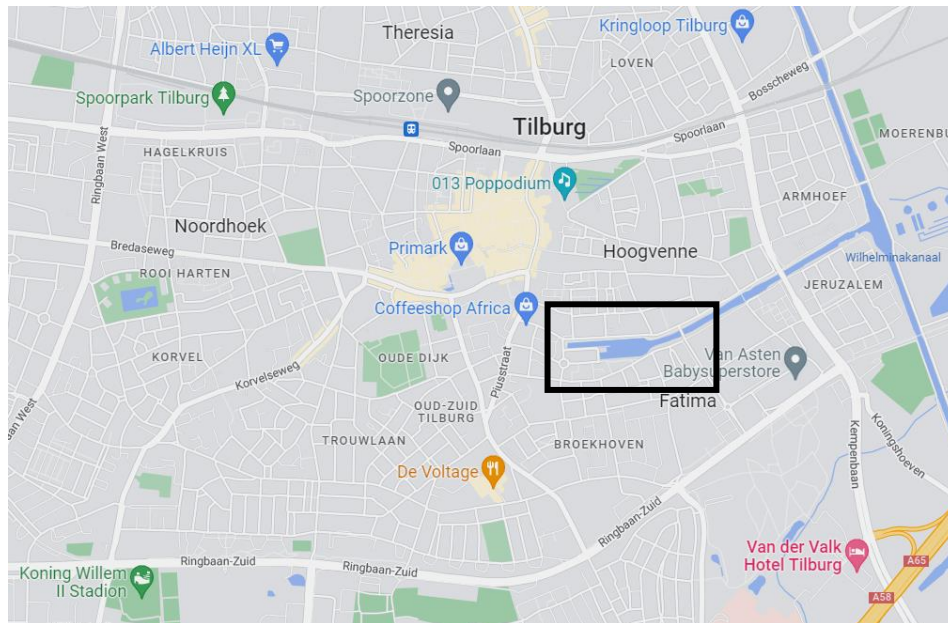
According to allecijfers.nl (2022b), there are 102,471 houses registered in Tilburg; 50% of these houses are owner-occupied, 33% are rentals by housing associations and 16% are other kinds of rentals. For 1% of the housing supply the type of housing is unknown. Almost half of the housing supply are rentals, which is above the national average of 43%. 37.9% of these rentals are social rent (Obbink, 2022). Tilburg faces a large housing shortage in the upcoming years. It is prognosed by the ABN AMRO in 2019 that in 2030 Tilburg has a shortage of about 4,800 houses (ranking them in the top 10 of largest absolute shortages nationwide), which in relative terms means there is a shortage of 22 houses per 1,000 inhabitants.

5.2.2 Piushaven

Near the city centre, at a once abandoned industry port the municipality is developing the Piushaven project. Figure 14 highlights the Piushaven on the map of Tilburg. Already in 2002, the municipality agreed with the redevelopment of the Piushaven. The ambition is to realise approximately 1,700 new houses in this area, accompanied with many facilities like schools, restaurants and shops (Projectbureau Piushaven, 2018). This development is spread over numerous smaller projects in 5 sub areas. including newly build buildings and redevelopment of already existing buildings. The Piushaven wants to profile themselves as the boulevard of Tilburg, balancing liveliness and liveability. Making it an attractive place for living, tourists and entrepreneurship (Piushaven, 2022). In the vision about the Piushaven published in 2018, the municipality wanted to realise 20% social rent of all houses in each sub area. Apart from this social goal, the municipality also wants the buildings to be sustainable. Nowadays, 20% social rent is rather unusual for these large scale projects near centres in large cities. However, Tilburg is already above the minimum of 30% social rent in each city that minister de Jonge recently demanded. Most locations in the area have already been realised and people are already living and working in the Piushaven.

Figure 14

The Piushaven shown on the map of Tilburg



*Note*¹⁴. The Piushaven is located in the square on the map, southeast of the city centre (yellow on the map).

¹⁴ Google Maps (2022)

6. Results

This chapter portrays the results that have formed after the data analysis and the interviews. Furthermore, the hypotheses are tested.

6.1 Quantitative results

A bivariate correlation test in SPSS was conducted to test the correlation on the hypotheses described in chapter 2. If a correlation was found, a multiple linear regression was run to test the causation between the variables in the hypotheses. Using the results on these hypotheses the results on sub question 4 are portrayed. The results from these quantitative tests and the hypotheses are explained in this section. An overview of the hypotheses is given below:

H1: A larger number of inhabitants in a municipality leads to relative more housing shortage.

H2: A larger number of inhabitants in a municipality leads to a larger percentage of social rent.

H3: The relative housing shortage is lower in municipalities with a higher percentage of social rent.

H4: The average processing time of houses is higher in municipalities with a high percentage of social rent.

H5: The average processing time of houses takes longer in larger municipalities, based on the inhabitants, than in smaller municipalities.

Table 3 shows the hypotheses, tested variables, the Pearson correlation found and its statistical significance. To test hypothesis 1 on correlation, a correlation test between the variables inhabitants and relative housing shortage 2030 was conducted. As can be seen in table 3, a weak negative correlation coefficient of $r = -0.350$ was found with a significance level of $p < 0.001$. Meaning that hypothesis 1 shows a correlation, municipalities with a larger number of inhabitants have a higher relative housing shortage. In the data both variables for absolute and relative housing shortage in 2030 had a negative number if there was a shortage of houses in a municipality and positive if there was a surplus of houses in a municipality. Therefore, the found correlation coefficient is negative. For the second hypothesis a correlation test between the percentage of social rent and the number of inhabitants of a municipality was tested. A moderate uphill correlation coefficient of $r = 0.469$ was found with a significance level of $p < 0.001$. Therefore, hypothesis 2 shows a correlation. A larger number of inhabitants in a municipality is correlated to a larger percentage of social rent. As shown in table 3, to test hypothesis 3 a Pearson correlation test was conducted between the relative housing shortage in 2030 and the percentage of social rent in a municipality. A weak negative correlation coefficient of $r = -0.118$ was found with a significance level of $p = 0.029$. This means that municipalities with a higher percentage of social rent also have a higher relative housing shortage. The correlation found is opposite to what was expected based on hypothesis 3. Lastly, the Pearson Correlation matrix in appendix 11.3 shows that the average processing time holds no significant correlation to any other variable in this matrix. No correlation between the average processing time and the percentage of social rent was found ($p = 0.606$). Therefore, hypotheses 4 and 5 are false since no significant correlation between the average processing time and the percentage of social rent in a municipality was found.

Table 3

Results from the Pearson Correlation tests. The first column explains which hypothesis is researched, the second and third column show which variables are used. The fourth column shows the outcomes from the Pearson correlation r , while the last column shows the 2-tailed significance.

Hypothesis	Variable 1	Variable 2	Pearson correlation r	Significance (2-tailed)
H1	Inhabitants log	Relative housing shortage 2030	-0.318	<0.001
H2	Inhabitants log	% social rent	0.5001	<0.001
H3	% social rent	Relative housing shortage 2030	-0.118	0.029
H4	Average processing time	% social rent	0.028	0.606
H5	Average processing time	Inhabitants log	0.001	0.984

To investigate whether the hypotheses which showed a significant correlation also showed a causation, a multiple linear regression was conducted in SPSS. In the first regression the relative housing shortage in 2030 was the dependent variable, the percentage social rent in a municipality and the log for inhabitants were the independent variables and the average income per person, household size and the average processing time were used as control variables. Hypotheses 1 and 3 were checked for a causation in this model. This regression model is significant, $F(5,331) = 11.021$, $p < 0.001$, $R^2 = 0.143$. The independent variable log inhabitants is significant ($p < 0.001$). However, the independent variable percentage social rent is not significant ($p = 0.984$). Therefore, hypothesis 1 is correct. A larger number of inhabitants in a municipality indeed leads to a relative higher housing shortage. Hypothesis 3 is proven wrong. Although a correlation was found between the relative housing shortage and the percentage of social rent in a municipality, these variables do not influence each other.

To test hypothesis 2 for a causation between the log inhabitants and the percentage of social rent a second multiple linear regression model was run in SPSS. In this model the percentage social rent is the dependent variable, the log inhabitants is the independent variable and the average income per person, relative housing shortage in 2030, household size and the average processing time were used as control variables. This regression model is significant, $F(5,331) = 101.614$, $p < 0.001$, $R^2 = 0.606$. The independent variable log inhabitants is significant ($p < 0.001$). Therefore, hypothesis 2 is correct. A larger number of inhabitants leads to a larger percentage of social rent in a municipality. The SPSS output of these regression models is placed in appendix 11.4. Linking these results to sub question 4, no causative relation between a higher percentage of social rent and the housing shortage has been found in the Dutch municipalities.

6.2 Qualitative results

Interviews were conducted to formulate an answer to the sub questions as described in the introduction. Appendix 11.1 provides an overview of the respondents and their function. The respondents are divided into three groups; people involved with the Piushaven in Tilburg, people involved with the Stationstuinen in Barendrecht and general people with much experience in the field of housing projects and a percentage of social rent in these projects. This section describes the results per group and subsequently describes the results for the sub questions 1-3.

6.2.1 Results interviews Piushaven Tilburg

The Piushaven is a rather large development that has been split into multiple smaller subprojects. The municipality aimed to develop 20% social rent and 10% mid priced rentals in each subproject. The Piushaven is almost completed, the last large scale project is currently in development. The respondents said that a project developer had to incorporate these affordable housing demands in the plans. If a project is relatively small, for example it enfolds one apartment complex of 10 or 20 apartments, it is not very logical to incorporate the demanded percentage of social rent by the municipality. Therefore, agreements were struck with the developer that makes it possible to leave out the social rent in a smaller project, as long as it is compensated in another larger project (Karapanagiotis, 2022). This is settled beforehand in an anterior agreement. The agreements for the Piushaven were struck quite a while back, therefore the percentage of affordable housing is rather low to current standards. New projects in Tilburg will most likely increase the share of affordable housing to 50%, including 30% of social rent (van den Heuvel, 2022). In most cases a housing association buys the social rent apartments from the developer to exploit these themselves. A project developer tries to get a good price for these apartments; however, this is easier said than done. The housing associations knows that a developer has to include at least 30% social rent, otherwise the project will not be approved by the municipality. Since these apartments have to be build and de developer has to sell these houses the housing association can demand lower prices. This will have a huge impact on the feasibility of a project. However, according to van den Heuvel (2022) it is possible to make feasible projects as long as the developer gets the freedom to develop the other 50% without too many additional demands. In this way, a developer can produce more high-end and expensive housing in the free 50% and compensate the loss of revenue in this way. Real estate investors who invest in a project may try to compensate for the loss of revenue due to the share of affordable housing. Especially large investors who are commissioned by large insurance companies and pension funds have to ensure a certain yield of their investments. These profits are used to pay out the insurances and profits, therefore the yield requirement often cannot be changed.

What became clear of the interviews is that the municipality Tilburg makes very sharp-cut (contractual) agreements with developers beforehand, furthermore several documents are available for project developers in which the demands and the rules for housing projects are laid out. A project has upheld several rules and standards for the types of housing, build environment in the neighbourhood and the general look of the city. Within these regulations the developer is rather free to build their own vision. The respondents claimed that by making these clear agreements very few adjustments during the plan process had to be made which eased and sped up the development of the Piushaven.

Since social rent provides lower returns for a developer, housing association often tend to develop the social rent in a city, this is also the case in Tilburg. Since the municipality believes the development of social rent is an important aspect in the housing construction in Tilburg. If a municipality holds a land position and therefore has an active land policy, they stimulate social rent by a social land price. The municipality wields a lower land price for this type of housing. Depending on the maximum rent price, a set land price is used. For the first and second capping limit (respectively a maximum of €633.25 and €678.66 rent a month) a land price of €15,750 per unit is used and for the rent between the second capping limit and the liberalisation threshold (a maximum monthly rent of €678.66 – €752.33) a land price of €23,750 per unit is used (Municipality Tilburg, 2021). These prices were also used in the Piushaven (Karapanagiotis; van den Heuvel, 2022). If in the future the land purchased at a social land price is sold, the municipality demands the difference between selling price and the social land price at which the land was bought back. This money goes into a restructuring fund and is used for new social rent developments (van den Heuvel, 2022). With an active land policy, the

municipality can set requirements that have to be met before selling the land. If a municipality does not own land and therefore has a facilitating land policy, the municipality has another tool to enforce their demands for a housing project. In most cases the land destination plan has to be changed before the construction may start. A municipality can set their demands for the project, if these demands will not be met, they will not change the land destination plan (van den Heuvel, 2022). Bringing the project to a halt. In this way the land destination plan is a powerful tool for municipalities.

A housing project is complex and many parties are involved. Therefore, there can be many things that could go wrong or delay a project. However, the number one delaying factor are the internal municipal agreements (van den Heuvel, 2022). Especially in large cities there are many experts working in a municipality and they all have to agree with the plans. It is not uncommon that in the top 20 cities of the Netherlands around 10 or 12 different municipal experts take a look at a plan before a green light has been given. This often creates huge delays.

The respondents indicated that they understand the municipal policy to set a social rent quota in building projects. If this quota is not set, there will be a large chance that at various projects the part social and middle priced housing is forgotten or not incorporated because it creates lower revenues (Karapanagiotis; van den Heuvel, 2022). The target group for social rent is often the group for whom it is very difficult to find a house. By incorporating a social rent quota more possibilities for these people to find a house are created. The market is failing which leads to an intervention of the municipality. These interventions are meant to safeguard the production of affordable housing and to guarantee the quality of the housing (van den Heuvel, 2022). Nonetheless, critical notes were placed when asked whether a social rent quota is an effective way of easing the pressure on the housing market. In the interviews it was mentioned that a lack of social rentals is not necessarily the problem in this housing shortage. It can even be questioned whether the housing shortage is indeed as high as portrayed (the million houses that have to be build). A lot of people are stuck in the housing market, the affordability for another type of house is a problem for those people. Often people in a social rental would like to move in another (often larger) house, but they cannot afford this due to the high prices (van den Heuvel, 2022). These high prices are partially caused by the low interest rates that make it very cheap for people to lend money. However, the starters in the housing market who want to buy their first house often cannot receive a sufficient bank loan. This creates a discrepancy between the haves (people who already bought a house in the past), and the have nots. Therefore, it is important a throughput is created in the housing market. This is more a form of qualitative shortage rather than a quantitative shortage. Furthermore, for the creation of new houses, more creative options need to be introduced (van den Heuvel, 2022). Housing associations might for example look at splitting houses (dividing a larger social rent house into multiple smaller social rentals), or house sharing (also known as Friends houses in which friends share a house and split the rent).

6.2.2 Results interview Stationstuinen Barendrecht

Next to the train station in Barendrecht 3,500 new houses are about to build. In this project 30% of the houses are supposed to be social rent, 30% is mid priced rent and cheap owner-occupied houses and the other for the other 40% the developers can decide for themselves what kind of housing they want to produce. It used to be 50% affordable housing in this project, however the municipality decided that it had to be increased to 60%. According to the project leader Paul Smolders (2022) this caused few problems with the developers since this increase was limited to the mid rent and cheap owner-occupied housing. These types of housing provide sufficient opportunities for developers to make profits. This increase was mainly to compensate the low share of social rent in the municipality (20.3% according to data from Obbink, 2022)

and to ease the pressure on the social rent sector in Rotterdam which is located next to Barendrecht. Multiple interviews indicated that parking is a difficult aspect to realise in any project. The costs are high and the returns are low. In Barendrecht they solved this problem by taking up the parking spaces themselves as municipality. Using the woningbouwimpuls (a subsidy to boost the construction of new houses), the municipality received funding from the state which was used to provide parking spaces for the affordable housing, for other types of housing a developer has to contribute for the creation of parking spaces and the public space. Another way Barendrecht is trying to solve the problem with parking spaces is by focussing on shared mobility solutions and the public transport. A parking space for a shared car equals four regular parking spaces. This massively cuts the costs and use of space. Municipalities should not be afraid to take the lead in difficult aspects like parking (Smolders, 2022). By taking the lead, municipalities can keep control over these aspects and meanwhile speed up the building process. According to Smolders (2022) the strength of this project is the tight cooperation and trust between the different parties. Different parties have different needs and objectives. It is important that the parties are aware of these needs and objectives. By creating this awareness, a better understanding between the parties evolves which eases the cooperation. Just like in the Piushaven, several documents on the quality of the housing and public space are available for developers. The plans by developers should be within these guide lines. This suits the facilitating land policy by the municipality. The municipality Barendrecht does not own much land themselves in this area, therefore they let private developers develop this area within the municipal guide lines.

6.2.3 Results general interview

From his broad experience in real estate, Lars Paulussen (2022) indicated that having a social rent quota of 30%, often in combination with other demands for affordable housing (mid rent and cheap owner-occupied housing), can cause struggles on multiple facets. Foremost, these demands have an economic impact. As stated before, affordable housing in general is less profitable. Therefore, these types of housing impact the feasibility of a building project. A developer might agree with lower profits; however, he will not proceed if the project is financial unfeasible and if the costs are higher than the returns. In order to tackle this decrease in returns, a developer tends to twist several knobs in order to get a positive financial result for the project. A developer might try to build more compact (building more houses on the same lot, for example by constructing higher buildings), or by saving money in the plan development process, or by constructing a cheaper public space. Often at the expense of the quality. In short, the developer is trying to optimize his plans in order to earn back this loss of return created by the share of affordable housing (Paulussen, 2022). This might result in less attractive or future proof neighbourhoods. Another problem are the parking spaces. Municipalities tend to set high parking norms, for cheaper types of housing most of these parking spaces have to be developed in the public space, leading to a high degree of hardening in a neighbourhood. While more luxurious types of housing have space for parking on their own property.

Many important land positions are already taken by developers. They buy pieces of agricultural land, speculating on the changes in the land-use plan and future development plans by municipalities. Based on these speculations they make a calculation of how much the land prices will be and how much they can pay for this land. The land price is also dependent on the type of housing, the price is lower for social rent and higher for single family homes. Therefore, it is profitable for developers to build more expensive types of housing. If the municipality requires the developer to include a certain percentage of social rent, the returns of the developer will decrease and in some cases their exploitation plan will be negative. In these cases, changes in the plans have to be made to ensure the plans are profitable, otherwise the plans are put off. This is especially a problem if a developer bought land keeping

in mind, they have to develop about 25-30% affordable housing (which used to be the average percentage for a long time), while under the current housing crisis municipalities sometimes require far higher percentages affordable housing (Paulussen, 2022). This discrepancy between the expectations of the municipality and the developer results in negotiations between these parties, which takes time and delays the whole process. It is important to make a nuance between large and smaller developers. Larger developers tend to attribute more to the general area development, while smaller developers try to make quick wins with speculative land purchase for shorter terms. Financially they have to develop or sell the land quicker, while larger developers can afford to hold a piece of land and wait for higher returns. If a municipality sets too high demands, a large developer can choose to develop another piece of land in a municipality that has more favourable requirements.

As explained before there is a difference between an active and a facilitating land policy by a municipality. In theory a development is not affected by these different land policies since all demands by the municipality are written down in contracts which legally bind the developer. However, in practice it is easier for a municipality to have an active land policy in a development since they are less dependent because they are the owners of the land (Paulussen, 2022). The negotiations are harder and municipalities may need to compromise if they do not own the land. The problem with an active land policy is that many municipalities, after the last financial crisis, sold their land positions. It is expensive to buy this land back again, furthermore the risks for a municipality to have an active land policy is higher.

It is understandable municipalities set a quota for social rent or affordable housing in general. However, Paulussen (2022) indicated that the aim to have 30% social rent in every municipality is rather pointless. People who are looking for a house do not tend to stick to just the municipal borders, but look at a larger scale to neighbouring municipalities as well. Therefore, these aims should be more focused on a regional housing market scale instead of a municipal scale. Furthermore, with the focus on one specific type of housing, the chances exist that a neighbourhood becomes too uniform and does not facilitate in creating a future proof neighbourhood in which people can have a housing career. This housing career is also important in creating a throughput on the housing market. Other interviews mentioned the problems with this throughput. A last critique Paulussen (2022) had on the social rent quota is the focus on percentages. In his opinion absolute numbers for affordable housing are more important than reaching a certain percentage. This creates more room for the developer to get a positive exploitation plan since the total number of houses could be increased, without necessarily increasing the number of affordable housings, while at the same time agreements can be made over the absolute number of affordable housings that is included within a project.

7. Conclusion

This research tried to answer the research question: “*What are the effects of setting a national social rent quota for municipalities on easing the pressure on the housing market in the Netherlands?*”. Furthermore, four sub questions have been drafted:

1. *How does a social rent quota affect the financial feasibility of a building project?*
2. *How does a social rent quota affect the quality of a building project?*
3. *In which way do developers alter the building plans due to a social rent quota during the planning process?*
4. *In which way affects a higher percentage of social rent the housing shortage in a municipality?*

These questions have been answered through mixed methods research in which information gained by interviews is supported with statistical data on social rent and housing shortage in Dutch municipalities.

In an attempt to keep their city affordable and available for all people, municipalities oblige project developers to include affordable housing, mainly social rent, in the construction plans. The idea is that the market failing to provide (sufficient) affordable housing, therefore local governments have to step in to make sure that affordable housing is realised. As described in the theoretical framework, the Netherlands has a long history of providing social rent for its people. Due to the current housing shortage, there is a necessity to provide more affordable housing. The theoretical framework described the current problems for the housing construction and explains how theoretically a quota for social rent can endanger the feasibility of a housing project.

Quantitative tests were conducted to provide statistical information on the number of inhabitants, share of social rent and the relative housing shortage in a municipality. Based on these quantitative results from the correlation and regression tests it can be concluded that more inhabitants in a municipality leads to a higher percentage of social rent. While at the same time more inhabitants cause a higher prognosed shortage of housing in 2030. This trend is also seen in the literature review. With the Pearson correlation test a correlation was found between municipalities with a high percentage of social rent and high relative housing shortage. Based on this test it seemed like a high percentage of social rent leads to a higher relative shortage, however the regression analysis proved that even though a correlation was found, these variables held no causative connection to each other. Furthermore, no correlation was found between the average processing time of houses and the percentage of social rent within a municipality. Neither statistical correlation between the average processing time and the municipal size, measured by inhabitants, was found.

To answer sub question 4, it can be concluded that the number of inhabitants drives the percentage of social rent and the relative housing shortage up. While the percentage of social rent in a municipality does not influence the relative housing shortage. So, no direct link between the percentage of social rent and the housing shortage has been found. However, both the percentage of social rent and the housing shortage are influenced by the external factor population size. This statistical analysis proves that a high percentage of social rent does not necessarily lead to less pressure on the housing market. Based on these findings the qualitative research was conducted to deepen the insights on the effects of a social rent quota and its effects on the housing pressure.

According to the respondents it is important that municipalities set demands for the social and mid rent, otherwise developers tend to build solely higher priced houses since these are most profitable. The market is failing; therefore, regulation is needed. They state that during these

times of housing shortage and rising housing prices it is important that new houses for people with lower incomes are being build. However, some critical notes on the 30% social rent in every municipality, as proposed by minister De Jonge, were added. It was pointed out that people do not stick to one municipality in their search for a house. Therefore, the housing market should focus more on a regional scale in which municipalities work together to provide enough and affordable housing. As shown in chapter 5, the housing stock and the demographics of cities differ. By looking at the regional demands a local solution can be offered, these solutions do not always realise 30% social rent in each municipality. Perhaps some municipalities need a higher percentage while others can do with a lower percentage. An example of these local solutions can be seen in the Stationstuinen in Barendrecht where they want to realise 60% affordable housing in their project, also to ease the pressure of the nearby located city of Rotterdam. According to the interviews these kinds of solutions are more often needed.

Based on the interviews, it can be concluded that it is important for the speed and ease of the planning process that the municipality makes clear agreements with the project developer(s). However, most delays are caused by internal municipal disagreements and bureaucracy. Many people at a municipality need to agree with a plan before it gets executed. These agreements made with the developers enfold the quality and design of the neighbourhood as well as agreements on affordable housing. Without these arrangements between the involved parties, it is harder for municipalities to realise the demands set in the housing visions. If a municipality has an active land policy it is possible to set demands that the buyer of the land has to agree upon. For a facilitating land policy, the municipality can set demands that have to be met before the municipality is willing to make the needed changes in the land destination plan.

In some cases, like in the Stationstuinen in Barendrecht, a municipality decides to increase the share of affordable housing in a project. This can cause problems for the feasibility, especially if the share of social rent is raised. Affordable housing has a cap on the rent or the house price that can be asked. Especially for social rent this price is low which makes the returns of a project to go down. In this way a social rent quota limits the returns and makes it harder to create a financially feasible building project. This answers the first sub question. In Barendrecht the municipality raised the share of mid rent and affordable owner-occupied housing, these types of housing provide more opportunities for developers to create a feasible plan. In an attempt to make a plan feasible, municipalities tend to use a lower land price for affordable housing projects, a so-called social land price. This social land price can only be used if the municipality has an active land policy and owns the land themselves.

Project developers sometimes take in speculative land positions. They buy pieces of land in the expectation that the municipality decided to build houses at these places and the value of the land goes up. In this way they buy cheap land and can sell the land for a profit. However, in determining the price they are willing to pay for the land, provisional calculations for the profits need to be made. If a municipality decides to realise a higher percentage of social rent, or affordable housing in general, the returns will go down. This sometimes results in a non feasible exploitation plan. Therefore, larger developers might delay or put off their plans. As explained in the results, larger parties have the financial striking power to work on other projects and set certain projects aside for a while. Smaller developers might continue, but they try to cut all sorts of costs. This might result in creating a cheaper public space in a neighbourhood or in using cheaper materials and less attractive architecture for the houses. By saving on these aspects the quality of the houses and the neighbourhood goes down, therefore it is important that the minimum quality is maintained by making agreements with project developers. This answers sub question 2. Project developers twist all sorts of knobs in

their attempts to lower the costs and make a project feasible. Since project developers are commercial parties, they try to increase their profits, however they do not always tend to make up for the loss of profit caused by an increase in the social rent. This depends on the type of investor behind a project. Certain parties like pension funds and insurance companies have to commit to a certain percentage of dividend in order to make sure they can pay out their clients. In order to keep projects profitable, it was indicated that a developer has to have the option to arrange a part of the plan to their own taste. Based on the current ideas of including affordable housing, about 50% of the housing is dedicated to the municipal demands for affordable housing and in the other 50% the developer should be let free to earn back the costs of the 50% affordable.

The interviews showed that parking spaces were often a difficult aspect in the development of a neighbourhood. Based on the results it can be concluded that it is very helpful for the process if the municipality takes up an active role in the realisation of the parking spots. This active role, in combination with clear agreements with developers, speed up the process and ensure that enough parking spaces at a reasonable size are realised. To link this to sub question 3, project developers often have several knobs they can twist in order to increase the returns and make a plan feasible. Examples of these knobs they twist is trying to alter the parking norms or adding shared mobility in their plans. Shared mobility can make up for several parking spaces. Furthermore, as explained before, the quality of the neighbourhood can go down, which might affect the attractiveness of the neighbourhood and result in less futureproof neighbourhoods. Building at a higher density is also an option to increase the returns, since more houses can be built on the same lot.

Using the insights gained from the answers on the sub questions, an answer to the main question is formed. In general, it can be said that there are two different effects of a social rent quota on the feasibility of new building projects in the Netherlands. On one hand, a plan can become unfeasible. The returns are too low and the costs are too high which causes developers to either postpone or to put off their building plans. On the other hand, a plan is still feasible however, changes need to be made in the original plan. Due to diminishing returns, caused by an increased share of social rent, developers need to twist some knobs. The effects of these actions can be divided into two groups; measures that lower the costs and measures that increase the revenue. To lower the costs, developers can cut in the planning process or they can opt for a lower quality in their building plans, as explained earlier in this section. To increase the returns of a project more expensive housing has to be added to the plan, or more housing in general is needed to make the plan feasible. The latter can be realised by increasing the density. Meanwhile the data shows that a high percentage of social rent not necessarily eases the housing pressure. Larger cities often have a higher share of social rent and at the same time a higher housing shortage. Setting up a social rent quota often leads to more affordable housing and at the same time to more expensive housing thanks to developers trying to increase the revenue in their unrestricted percentage. Houses for the middle classes are often overlooked and the throughput of people stops. The housing shortage is in some cases more of a qualitative rather than a quantitative shortage. A social rent quota is in some extend needed in the Netherlands, but it is not the solution to the pressure on the housing market.

8. Discussion

This chapter aims to provide an interpretation of the conclusions of this research and reflect on the expectations formed by the used literature and existing theories. Furthermore, the limitations of this research and possibilities for further research are discussed in this part.

Based on the literature and the current housing policies it would be expected that a higher share of social rent would have positive effect on the housing shortage. Municipalities and the national government aim to set a social rent quota of at least 30% in their attempts to tackle this growing housing shortage in the Netherlands. However, it is striking that the data does not show a positive correlation between the percentage of social rent and a lower housing shortage, let alone a causality. This indicates that focussing on expanding the share of social rent within a municipality does not necessarily solve the housing shortage in the Netherlands. In the interviews the respondents also indicated that even though it is important that the municipality steps in to ensure social rentals are being built, a social rent quota would not necessarily ease the pressure on the housing market. This is contradicting the theories in the literature and indicates that the housing shortage is not necessarily a shortage of social rent or affordable housing in general. Further research should deepen the insights in the specific types of housing that are needed. With these results municipalities can build specifically for the local housing needs.

Every building project is unique, there are no two neighbourhoods exactly the same. Nonetheless, certain similarities can be found between projects. Many municipalities have comparable aims for affordable housing and sustainability. Also, many problems, like the feasibility of a plan or the creation of enough parking spaces, are universal across different plans and municipalities. Therefore, it is possible to compare plans and solutions and is it possible for municipalities to learn from each other. One of the most mentioned problems was implementing parking spaces in a planning process. By creating more high end houses with parking on their own terrain a part of this parking problem can be solves. Parking on own terrain also leads to fewer hardening (fewer parking spots) in the public space. This is beneficial for the environmental demands municipalities often have. Fewer hardening in the public space leaves room for more green spaces, that not only make a neighbourhood more attractive, but is also beneficial for the drainage of rainwater. Furthermore, by creating fewer parking spaces people are more encouraged to use other types of transport like public transport or shared vehicles. By taking up these aims the municipality can cover multiple environmental goals in once.

Even though increasing the social rent quota may cause feasibility problems, it was expected that many construction projects still take place. It is in the interest of none of the parties to fully cancel a project. The municipality would miss out on new houses and new inhabitants, while the developer will miss out on revenue. Especially in cases of a facilitating land policy, developers own the land. By not building on this land, it only costs them money while no revenue is created. Therefore, it is in the best interest of all involved parties to somehow create a feasible plan and to start building as soon as possible. Nonetheless, it was expected that a high percentage of social rent would lead to a delay in the planning process. However, rather contrary to what was expected, the interviews proved that this was not always the case. By making clear agreements beforehand, all parties know what to expect and what the demands are. This explains why it is important to not change the original plan and prevent delay. Many municipalities understand this, therefore aspects as social rent often do not cause lagging processes.

The ambitions in De Stationstuinen in Barendrecht are very high, the municipality is aiming to realise 60% affordable housing in this project. It is striking that according to the respondents

the resistance from the developers was minimal when the municipalities increased the percentage of affordable housing from 50% to 60%. The developers are allowed to develop to other 40% according to their own vision. The prices for this 40% are not yet known, but it can be expected that the prices of these houses are rather high to compensate for the loss of revenue and to make the plans feasible for the developers. This suits the conclusions based on other interviews. However, unexpectedly, the interviews proved that developers do not always tend to make up for the loss of revenue due to an increase in the affordable housing. This is depending on the investors behind a project. Nonetheless, a feasible plan is a must for a development to start. Furthermore, as explained in the conclusion, developers twist all sorts of knobs to make a plan feasible, often at the expense of the quality. This raises questions about the neighbourhood quality in a few years. Time will tell how this plan evolves and what future lies ahead of this neighbourhood. This will provide interesting research opportunities in the future.

This research beholds a couple of limitations. First of all, the data used is not always ideal. So is the data on the housing shortage a rather rough dataset. The housing shortage is presented as a uniform shortage. In reality there is often a shortage of certain types of housing and the shortage is not limited to the municipal borders. In most cases people with lower or middle incomes cannot find a house and the need for affordable housing is large. Besides, people tend to look at multiple neighbouring municipalities in their search for a place to live, therefore the housing shortage should be measured on a regional scale. However, specific data on the type of housing needed and regional housing shortage was not nationally available. For a better quantitative housing shortage analysis, more specific data on the housing shortage needs to be collected. Using this data, a better picture of the specific housing shortages in the Netherlands can be made. This will strengthen the statistical analysis. Furthermore, the used data originated from different years. This research used the most recent available data, however, this led to a comparison of data over different years, which could have implications on the results. Due to the recent municipal changes the data had to be adjusted to the most recent municipal borders. Also, the data on the average processing time and the newly prepared houses was from 2017, which is not very recent in the light of the fast changing developments of the housing market in the Netherlands.

Recently minister Hugo de Jonge announced that the government wants to regulate mid priced rent. Rents till about €1,250 a month should be regulated and the point system as it is for the social rent, should be extended to the mid priced rent (NOS, 2022b). This may create interesting changes in the housing, and its effects need to be researched in a later stadium. Alongside other governmental interventions that may occur in the future, this creates intriguing new research opportunities. According to researchers from the CBRE, the largest real estate consultancy in the world, the first effects of these government interventions can already be seen (Peters, 2022). In the second quart of 2022 the investments in real estate were much below the expected average. The CBRE claims this is mostly due to the insecurity of the new regulations and the expected problems for the financial feasibility if the mid priced rent is regulated and the construction costs keep on rising (Peters, 2022).

9. Policy implications

By calculating the sum of the housing shortage or surplus of each municipality the total housing shortage was calculated. This resulted in a shortage of 210,828 houses over the whole of the Netherlands. This is lower than the shortages mentioned in policy reports or in the media. So did a group of 34 organisations in the field of housing and construction recommendations on the development of the housing market. They claimed that in the period till 2031 1 million houses had to be built in order to keep up with the housing need (NOS, 2021a). The interviews also indicated that the housing shortage is much more a qualitative shortage than a quantitative shortage. Also, the organisations claiming 1 million houses are needed, often have an interest in building many houses, this makes this shortage questionable. Nonetheless, it remains a fact many people have trouble finding a (suitable) house. This discrepancy can be further explained since some municipalities are more attractive than others and therefore, the shortage in some municipalities is much higher than in other municipalities. A part of the solution for the housing shortage can be found in better utilizing the existing housing stock. For example, by making it more attractive for people to stay or go to municipalities that are expecting a housing surplus in the near future. Or by facilitating house splitting or house sharing. This will take away some of the pressure of the housing construction, which is already experiencing hard times with the rising material costs and the lack of employees.

The current housing policy focusses on a uniform and national scale, while the housing need differs a lot throughout the Netherlands. This can be seen in statistics like the housing shortage. So is the shortage greater in the Randstad, while some border municipalities or places in the north or south of the Netherlands even experience a housing surplus. People tend to search for a house in a region, not specifically in one municipality. Furthermore, the demographics of the municipality, which often differ vastly across municipalities as shown in chapter 5, affect the specific housing needs. Municipalities with many students and starters, like Tilburg, need different types of housing than municipalities with many young families, like Barendrecht. Therefore, a more regional approach with specific data on the needed housing types would be better suitable to the housing needs.

Social rent in the Netherlands is not merely for the low income households, but also for the (lower) middle income households as stated in this research. This causes a large group of people to qualify for social rent. While there is already a shortage of these kinds of housing. By constructing (cheaper) houses for the middleclass-income households a throughput can be realised in the housing market. The middleclass in the Netherlands often falls between two stools since they cannot afford to buy a house, and cannot access social rent due to the long waiting lists. The current plans to regulate the mid priced rents can be a good first step. The government should stimulate a throughput of housing, especially for cheaper kinds of housing. For most people living in social rent, it is unattractive to move to more expensive kinds of housing, especially if they cannot get a loan to buy a house. By changing the legislation, it should be possible to charge rents higher than the liberalisation threshold for people with a cheap skewed income-to-rent ratio. However, a throughput needs to be facilitated for those people. Much more houses in this category are needed in the future. Regions should focus on increasing this sector, especially in regions with a high share of social rent, it could prove better to increase the output of mid priced rentals instead of social rent. The increased revenue due to this higher priced sector make more plans feasible and in time can be reinvested in new building projects.

However, the most important policy implication that can be noted from this research is the importance of speeding up the internal municipal bureaucracy. Especially in large municipalities many people within the municipality have to agree upon the construction plans before these can be executed. This causes a lot of delays. This is hard to realise without

impacting the quality of the neighbourhood. However, it is much needed if the Netherlands plans to achieve its aims for housing construction. Fewer people should be able to have a say in a project and experts on different fields should judge the plans. These people need to be educated and trained in this. This will be a joined task for companies, governments and knowledge institutes. Such a cooperation, which can be labelled as a sort of triple helix model, should be able to accelerate the housing construction.

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11. Appendix

11.1 Interview outline

Structure of the interviews:

- General
- Municipal policy
- Effects on building plans
- Financial effects
- Housing/neighbourhood quality
- Closing

Introduction:

I am Lex Ridderikhoff, I am enrolled in the master Human Geography at the University Utrecht and currently I am working on my thesis.

I am conducting research to the effects of a national social rent quota on the housing shortage in the Netherlands. As a part of my data gathering, I am interviewing people involved in building projects in the Netherlands. I believe you have some interesting insights for this research and therefore I would like to interview you.

Let me clarify there are no wrong answers and you are free to interrupt for questions or quit this interview at any time.

Can I use your name and function as a reference in my thesis?

May I record this interview, so I can recall parts of this interview in later stages in my research?

Questions:

General

1. Can you introduce yourself?
2. What is your function?
3. How are you connected to *(project name)*?
4. How long have you been involved with this project?

Municipal policy

5. What is your opinion on the municipal housing policy in *(name municipality)*?
6. Would you say a national social rent quota is an effective solution to the housing shortage?
 - o And why?
7. What (other) solutions would you propose to tackle the housing shortage?
8. Would you say the current municipal policy is effective in tackling the housing shortage?
9. Have you ever come across a municipality with a social equalizing fund?
 - o If yes, what effects did this have on the planning process?
10. Have you ever come across cases in which the municipality increased the social rent quota during the planning process?
 - o Which other demands do the municipality set during the planning process?
 - o What does this mean for your work?
11. Why would a municipality increase the social rent quota during the planning process?
 - o What is your opinion on such an increase?

12. Is there a difference of an active or facilitating land policy on the demands set by the municipality?

Effects on building plans

13. What are the effects of a social rent quota on the building plans?
14. What are the effects of an increase in the social rent quota on the building plans?
15. What is the effect on the speed of housing construction?

Financial effects

16. Can you describe in which way the social rent quota affects the financial feasibility of a project?
17. Can you describe in which way an increase in the social rent quota affects the financial feasibility of a project?
18. Does this social rent quota have an effect on the revenue of a building project?
 - If yes, do developers try to tackle this decrease in revenue?
 - If yes, which aspects do developers change in the plans?

19. Do municipalities chip in to compensate for the social rent quota?

Housing/neighbourhood quality

20. Does a social rent quota affect the quality of the houses itself?
 - And if yes, in what way?
 - Does this effect all types of housing (social rent, private rent and owner-occupied)?

21. Does a social rent quota affect the quality of the new to build neighbourhood?
 - And if yes, in what way?

Closing

22. Are there any other comments you like to add, regarding this research and interview?
 - Or do you feel like I missed some important aspects in my research?

23. *Conclude the main points made in this interview.*

11.2 List of interviewed people

A list of the interviewed people divided per subject. The function, name and date of the interview are explained in this list.

Piushaven Tilburg

Function	Name	Date
Planning economist at the municipality Tilburg	Wasili Karapanagiotis	7-6-2022
Real estate strategist at the municipality Tilburg	Edwin van den Heuvel	19-7-2022

Stationstuinen Barendrecht

Function	Name	Date
Project leader at the municipality Barendrecht	Paul Smolders	15-6-2022

General

Function	Name	Date
Senior consultant plan economics and area development at PAS bv	Lars Paulussen	10-6-2022

11.3 Pearson correlation coefficient

The output from the Pearson correlation test in SPSS.

		Correlations			
		loginh	Relative housing shortage in 2030	% Social Rent	Average processing time
Inhabitants log	Pearson Correlation	1	-.318**	.501**	.001
	Sig. (2-tailed)		<.001	<.001	.984
	Sum of Squares and Cross-products	44.034	-477.203	492.966	1.304
	Covariance	.129	-1.395	1.441	.004
	N	343	343	343	341
Relative housing shortage in 2030	Pearson Correlation	-.318**	1	-.118*	.022
	Sig. (2-tailed)	<.001		.029	.685
	Sum of Squares and Cross-products	-477.203	51269.902	-3946.466	875.897
	Covariance	-1.395	149.912	-11.539	2.576
	N	343	343	343	341
% Social Rent	Pearson Correlation	.501**	-.118*	1	.028
	Sig. (2-tailed)	<.001	.029		.606
	Sum of Squares and Cross-products	492.966	-3946.466	21947.015	728.461
	Covariance	1.441	-11.539	64.173	2.143
	N	343	343	343	341
Average processing time	Pearson Correlation	.001	.022	.028	1
	Sig. (2-tailed)	.984	.685	.606	
	Sum of Squares and Cross-products	1.304	875.897	728.461	30791.161
	Covariance	.004	2.576	2.143	90.562
	N	341	341	341	341

** . Correlation is significant at the 0.01 level (2-tailed).
* . Correlation is significant at the 0.05 level (2-tailed).

11.4 Multiple linear regression model

The output from the multiple linear regression model in SPSS with relative housing shortage in 2030 as dependent variable.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change
						F Change	df1	df2	
1	.378 ^a	.143	.130	11.4169	.143	11.021	5	331	<.001

a. Predictors: (Constant), Average processing time, Log inhabitants, Average income, Household size, % social rent

b. Dependent Variable: Rel. housing shortage in 2030

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7182.991	5	1436.598	11.021	<.001 ^b
	Residual	43144.249	331	130.345		
	Total	50327.240	336			

a. Dependent Variable: Rel. housing shortage in 2030

b. Predictors: (Constant), Average processing time, Log inhabitants, Average income, Household size, % social rent

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	69.115	18.037		3.832	<.001	33.633	104.597
	Average income	-.546	.151	-.194	-3.623	<.001	-.842	-.249
	% social rent	-.008	.127	-.005	-.066	.948	-.257	.241
	Log inhabitants	-12.186	2.313	-.332	-5.268	<.001	-16.737	-7.636
	Household size	-.893	5.410	-.012	-.165	.869	-11.536	9.750
	Average processing time	.053	.067	.041	.787	.432	-.079	.185

a. Dependent Variable: Rel. housing shortage in 2030

The output from the Multiple linear regression model in SPSS with percentage social rent as dependent variable.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			
						F Change	df1	df2	Sig. F Change
1	.778 ^a	.606	.600	4.9598	.606	101.614	5	331	<.001

a. Predictors: (Constant), Average processing time, Log inhabitants, Average income, Rel. housing shortage in 2030, Household size

b. Dependent Variable: % social rent

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12498.538	5	2499.708	101.614	<.001 ^b
	Residual	8142.636	331	24.600		
	Total	20641.174	336			

a. Dependent Variable: % social rent

b. Predictors: (Constant), Average processing time, Log inhabitants, Average income, Rel. housing shortage in 2030, Household size

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	56.338	7.385		7.629	<.001	41.810	70.865
	Average income	-.330	.064	-.183	-5.134	<.001	-.456	-.203
	Rel. housing shortage in 2030	-.002	.024	-.002	-.066	.948	-.049	.045
	Log inhabitants	8.667	.931	.369	9.305	<.001	6.835	10.499
	Household size	-25.369	1.892	-.514	-13.407	<.001	-29.091	-21.646
	Average processing time	-.004	.029	-.004	-.126	.900	-.061	.054

a. Dependent Variable: % social rent

11.5 Interview transcripts

The transcripts of the interviews are confidential.